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An Empirical Study on Project Management Maturity in Human Resources^{*}

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The assessment of the Project Management Maturity (PMM) level shows the company how good it is at managing projects. This measurement can be performed in different domains of expertise. In the article, the issue of PMM in the human resources (HR) area is examined. The discussion is based on a world-wide empirical research project conducted in more than 400 companies. The study was mostly focused on the machinery industry as there is a dearth of research on project management topics in this branch of the economy. Therefore, by investigating the PMM level in the HR area, a picture of the state of project management in the machinery industry will be created. For the purposes of comparison, a study was conducted on the construction (CONS) and information technology (IT) industries which, in contradistinction, are very well recognized in the scientific literature related to project management issues. This approach will help to better contextualize and understand the results from the machinery industry. The PMM level measurement was done using the author's model which assesses maturity on a scale of one to five, where one is the lowest and five, the highest level of maturity. The results of the study revealed that there were differences among the industries in PMM levels and between Polish and foreign companies.

Keywords: Project management maturity (PMM), human resources (HR), assessment, level, machinery, construction (CONS), information technology (IT), empirical study.

Introduction

Human resource management (HRM) is of high importance for companies doing business (Becker & Huselid, 2006). People in projects are a key asset and require special attention (Adler, Heckscher, & Prusak, 2011; Spalek, 2011). The Project Management Maturity (PMM) concept is used to measure how good the company is in managing projects (Kerzner, 2004; Spalek, 2014). There are different models of assessing the level of PMM in various areas of investigation (Cooke-Davies, 2007; Crawford, 2006). However, the vast majority of them assess the PMM in each area separately, including human resources (HR) (Pemsel & Wiewiora, 2013). One notable exception is the Organizational PMM Model (OPM3[®]), which measures maturity against a comprehensive list of best practices (Ghorbanali, Khosravi, Afshari, Borzabadi, & Valipour, 2011).

The discussion in the paper is based on a world-wide empirical study conducted in three types of industries: machinery, CONS, and IT. The investigation was carried out on more than 400 global companies.

^{*} This work was supported by the National Science Center Grant.

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The main focus of the study was intentionally on machinery industry companies. This was as the result of a literature review on project management related topics (Blomquist, Hallgren, Nilsson, & Soderholm, 2010; Kwak & Anbari, 2009). It revealed that there was a plethora of studies in the CONS and IT industries (Carcary, 2011; Dantes & Hasibuan, 2010; Kang, O'Brien, & Mulva, 2013; Kmieciak, Michna, & Meczynska, 2012; Pinter & Psunder, 2013; Pretorius, Steyn, & Jordaan, 2012; Spalek, 2013; Willis & Rankin, 2012), while there was a significant shortage of investigations into machinery industry companies.

Therefore, the article research question is: What is the PMM level of machinery industry companies in relation to their CONS and IT counterparts?

PMM and HR

The concept of assessing PMM was developed based on the Capability Maturity Model (CMM) which was proposed for software development purposes (Twaites, Collofello, & Zenzen, 2004). Then, building on this idea, further PMM models were developed for different purposes (Belt, Oiva-Kess, Harkonen, Mottonen, & Kess, 2009; J. Y. Lee, D. Y. Lee, & Kang, 2007; SCAMPI, 2006; Spalek, 2012). Their applications vary between industries (Khoshgoftar & Osman, 2009). Moreover, their scopes of measurement can be different (Wendler, 2012). At the moment of writing, there are several PMM models supported by various authors and by organizations (OGC, 2006; PMI, 2008). The majority of them address HRM issues very carefully. This is due to the importance of highly skilled workers in projects nowadays. Their experience, knowledge, and practical abilities are crucial for successful project execution. Therefore, it is desirable that the company possesses a system to measure the performance of project managers as part of an overall employee assessment system and operates a formal program of training and development for those taking part in projects (Kuprenas, Madjidi, & Alexander, 1999). In order to assign competent people to their projects, the company is advised to provide various career paths for individuals having different functions in projects. This should result in designating competent people to their project endeavors. Moreover, the technical skills of people involved in projects should be assessed using a formal system of measurement to ensure that the people assigned to projects have adequate competencies to fulfill their roles.

Furthermore, the development of professional project managers and team members ought to be ensured through established procedures in the company. As a result, those holding chosen positions in a project should be provided with training on project management.

By endorsing membership in communities related to project management, the company can raise the overall awareness level on the importance of exchanging knowledge between the individuals involved in projects.

As soft skills are of high importance in managing projects nowadays, project managers should be given training in them (Stevenson & Starkweather, 2010).

The result of all activities related to project managers should be an increase of their competencies in (Isik, Arditi, Dikmen, & Birgonul, 2009):

- project initialization;
- project planning;
- project execution;
- project control and monitoring;
- project conclusion;

- project communication;
- leadership;
- cognition (e.g., adequate information processing and application);
- effective project management.

Other than business related issues, project managers are well advised to be acquainted with the code of ethics (Badiru, 2009).

The most mature project management companies are recommended to continuously search for areas of improvement through the processes associated with (Andersen & Vaagaasar, 2009; Vrincut, Deac, Badea, & Raicu, 2013):

- HR allocation;
- teamwork;
- recruitment;
- staff development.

All activities undertaken by the company in the HR area are highly significant in the multi-project environment in which the implementation of project management office is strongly advised (Aubry & Hobbs, 2011; Spalek, 2012).

Research Method

The empirically grounded research on PMM was conducted using a web-based survey. The format of the questionnaire ensured the gathering of valid data from a large number of respondents (Spalek & Zdonek, 2011). The companies participating in the study were from over 20 countries, with the majority from the European Union and North America. Some of them were from the Middle East and Asia & Pacific areas. The companies were reached through direct mailing, industrial internet forums, and advertisements at trade fairs. After thoroughly analyzing all the gathered questionnaires, 447 of them qualified for further data analysis and discussion. The division into the branches is shown in Figure 1.

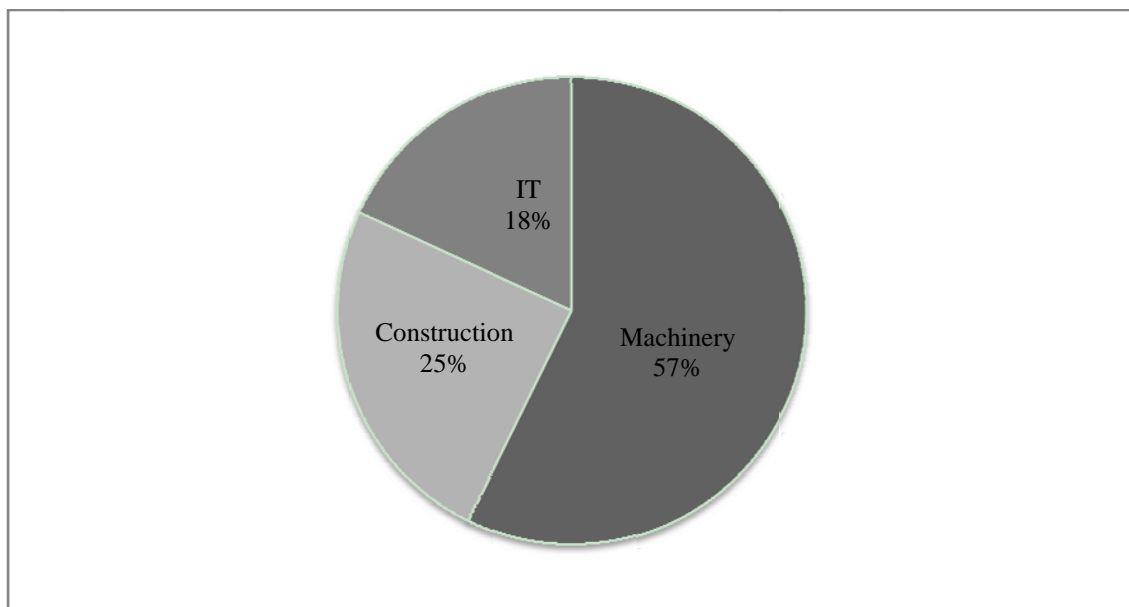


Figure 1. Companies participating in the study by industry.

The assessment of the PMM level was done using the author's model which measures maturity in the following areas:

- methods and tools;
- HR;
- project environment;
- project knowledge management.

In the model, the assessment is done in each area separately. In this article, the discussion is limited to the HR area only.

The results from the PMM assessment are on a scale of one to five, where one represents the lowest and five, the highest level of maturity. They are named accordingly: initial, standardized, appliance, system management, and self-improvement.

In order to better investigate the maturity levels, only the data from companies employing more than 49 people were chosen for further discussion. Such companies numbered 429. Slightly more than half of them were Polish companies. The final data sample, divided into industries, consisted of 126 machineries (IND), 61 CONS, and 40 IT companies.

Results and Discussion

Cronbach's Alpha tests (see Table 1) were applied to check data reliability, reaching values over 0.8.

Table 1

Reliability Statistics of Polish (POL) and Foreign (Other) Companies

Country	Cronbach's alpha
POL	0.880
Other	0.867

The descriptive data analysis shows that the highest dispersion of data is in foreign IT companies and is slightly lower for the POL CONS industry, while the lowest dispersion is noted for foreign CONS firms and fractionally higher for the POL IT sector. The POL and foreign machinery companies reported nearly the same, middle dispersion.

The 5th level of maturity (the highest) was reached by foreign machinery and IT companies only. The other groups reported the 3rd level as being the highest, while POL IT entities reached only the 2nd level. Each group of POL companies and foreign IT ones reported the 1st level of maturity (the lowest), while other foreign ones showed the 2nd level as being the minimum.

Detailed descriptive statistics of each group of companies are shown in Table 2.

It is remarkable that all POL IT companies reached only the 1st or 2nd level of PMM in the HR area, while above 80% of foreign ones reported the 3rd or 4th level. Moreover, nearly 10% of foreign IT firms showed the highest level of maturity. This observation shows that foreign IT companies are investing much more in the HR area than POL ones and, therefore, that can negatively impact on the competitiveness of the latter ones over time.

Above 90% of the POL machinery industry companies reported only the 1st or 2nd level maturity, while 98% of foreign ones reached the 2nd or 3rd level. The result for POL companies which reached the lowest "initial" level of maturity means that there are no project management practices at all and, in the short term, it must be increased, otherwise it will be very hard for them to compete with foreign ones.

Table 2

Detailed Descriptive Statistics of POL and Foreign (Other) Companies by Industry: Machinery (IND), CONS, and IT

		IND	CONS	IT
POL	Mean	1.83	1.92	1.83
	Median	2	2	2
	Std. Deviation	0.56	0.71	0.38
	Minimum	1	1	1
	Maximum	3	3	2
Other	Mean	2.5	2.08	3.17
	Median	2	2	3
	Std. Deviation	0.6	0.28	0.8
	Minimum	2	2	1
	Maximum	5	3	5

The biggest similarities were between POL and foreign CONS companies. In both cases more than 90% reported the 2nd and 3rd levels. This shows that in most instances, they apply project management practices; however, there is still room for improvement.

Detailed information on the frequencies of reaching each level of PMM maturity is shown in Tables 3 and 4.

Table 3

PMM Level in Foreign Companies by Industry

Industry	PMM level				
	1	2	3	4	5
Machinery	0%	53.57%	44.64%	0.00%	1.79%
Construction	0%	91.84%	8.16%	0.00%	0.00%
IT	2%	7.32%	70.73%	9.76%	9.76%

Table 4

PMM Level in POL Companies by Industry

Industry	PMM level				
	1	2	3	4	5
Machinery	23.02%	67.46%	9.52%	0.00%	0.00%
Construction	30%	49.18%	21.31%	0.00%	0.00%
IT	18%	82.50%	0.00%	0.00%	0.00%

It is remarkable that a significant number (18%-30%) POL companies reported the lowest “initial” level of PMM in the HR area which, in fact, means that in those companies, the projects are managed in a chaotic way which is far from systematic project management. The way of managing projects depends only on the abilities of individuals, which are neither checked nor controlled. Therefore, the uncertainty of such endeavors is relatively high and to put it more under their control, companies should undertake to increase their maturity first to level two and then upwards. This approach can be observed in foreign companies. In this group, no machinery or CONS company reported the 1st level of PMM maturity, and in IT, it was a negligible figure of 2%. Moreover, 8%-71% of them attained the 3rd level of maturity, with the leader in IT, which additionally showed nearly 10% on levels four and five.

The results of the study show that, in general, the foreign companies reported the higher maturity levels in

each industry; however, the biggest difference of one level was reported in IT and the lowest, in CONS ones, where it was nearly the same. Around a 1/2 maturity level was observed in the machinery industry. Moreover, there were no major differences between industries in POL companies. They reached an overall 2nd mean level of PMM maturity in HR. In foreign companies, the variety of maturity levels was greater. The most mature were from the IT branch, then machinery and finally CONS.

In both POL and foreign companies, the leaders seem to be IT; however, to a different extent. They are establishing new approaches to HRM and the other industries are following suit.

Figure 2 shows the overall differences in mean maturity level by industries in POL and foreign companies.

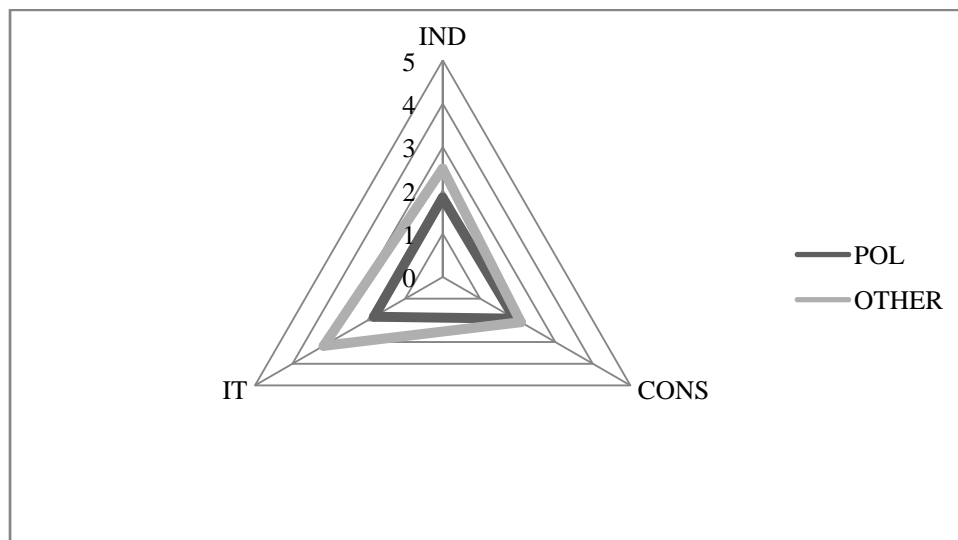


Figure 2. The overall comparison of mean maturity between POL and Foreign (Other) companies by industry: machinery, CONS, and IT.

Conclusions

The world-wide study on PMM revealed that there were differences in PMM levels in the HR area between POL and foreign companies. The mean PMM level of the latter ones was higher than that of the former. However, the biggest difference was in IT. Moreover, the comparison between industries shows that IT is a leading industry in PMM in HR. That means that in IT, especially in foreign companies, the understanding of the importance of people in projects is higher. The other branches placed a lower emphasis on staff-related issues. They probably underestimate the role of the workers in project success. For them, it is more important to invest in methods, tools, and techniques than in HR. This approach, which was adequate during the industrialization age, is no longer sufficient nowadays. Currently, success in managing projects, and therefore by the entire company, is mostly related to the skilled workers. However, their skills should not be limited to technical knowledge. The approach to HRM should go beyond the traditional, technical approach and relate to different activities, including soft skills trainings and career paths. As a result, the PMM level in the HR area will increase which will be profitable for the entire company.

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Main Factors Affecting the Balance of Investments in Serbia and New Trends of Investment

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The importance of investment for the development of some country is undeniable. In today's economic conditions, it is necessary to observe all the influencing factors and examine their impact on the investments in the economy of some country. The goal of each country is to create a favorable climate (conditions) for the investments, because they stimulate the growth and development of the country. The aim of this paper is to point of the current situation (the past few years) of the foreign investments in Serbia's economy and to highlight the main factors that influenced this situation. In a past few years, there is another trend of unexploited resource of investment seen in Serbia, which is more and more attractive in the region, but unfortunately unjustly neglected in Serbia. These sources are venture capital and private equity funds. Some of the influencing factors that must be emphasized are the country's general economic situation, political risks, taxation, the financing of the investments, the government's incentives (subsidies), support from some specialized institutions, etc..

Keywords: foreign investments, influencing factors, venture capital and private equity funds.

Introduction

After the fall of the socialist system of economy, transition economies have opened their markets for the entry of foreign investment. Looked from the side of the investitures, these countries, including Serbia, represented a new market potential for them. From the point of developing countries, this investment represented the possibility of external growth and development.

It was only in the early 21st century when Serbia was affected directly by investments although its socialist system collapsed in the 1990s. The reason for this lies in unregulated legislation and high political risk of the country (Milenković, Ikonić, & Milošević, 2011).

In January 2001, Serbia's new government launched an ambitious program aimed at a rapid transition to a market economy, the normalization of relations with foreign creditors and integration with regional, European Union (EU) and world markets. The government's economic program rested on three pillars: (1) more prudent macroeconomic policies; (2) market-oriented structural reforms; and (3) the mobilization of significant financial and technical support from donors (Government of Republic of Serbia, 2010; 2011a).

Serbia has enacted specific legislation outlining guarantees and safeguards for foreign investors. The

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current Law on Foreign Investments establishes the framework for investment in Serbia (Government of Republic of Serbia, 2003). The law eliminates previous investment restrictions; extends national treatment to foreign investors; allows the transfer/repatriation of profits and dividends; provides guarantees against expropriation; and allows customs duty waivers for equipment imported as capital-in-kind. In order to attract foreign direct investment (FDI), Serbia developed a range of incentives for investors in 2006, including cash grants to investors that create significant new jobs, as well as tax incentives in the form of credits, cuts in payroll contributions and reduced corporate tax rates (Dimireva, 2010).

Serbian government has created Serbia Investment and Export Promotion Agency (SIEPA) with the mandate to promote Serbia as favorable location for FDI. This agency provides direct assistance to investors. SIEPA has successfully attracted some headline strategic investors (Dimitrijević, 2000).

Thanks to all measures and development programs that the government has taken to improve investment in Serbia in the past decade, there was an increase in foreign investment noted. This growth has been stunted under the influence of the global economic crisis that affected the economic system of Serbia.

Research Questions and Research Methods

The aim of this review paper is to present the situation of FDI in Serbia and to draw attention to the new trends of investment. So, the main question that arises is what are the factors that have significant influence on the volume and dynamics of foreign investment? Is there a mechanism (institutions, development strategy with clearly defined goals, etc.) that initiates and encourages foreign investors to invest in our country?

To obtain answers to these questions in this article, it will use the following methodology. Using available resources it will be determine the balance of investments in Serbia in the past period. Then by analyzing the documents issued by state institutions it will be determined if there is support that encourages foreign investment in Serbia. Document analysis and interview based facts lead to conclusions about the important factors that may be set aside as incentive to attract foreign investment. In conclusion, there is an analysis given that point of unused opportunities to attract foreign investment in the form of venture capital and private equity funds.

Analysis

Overview of Investments in the Last Decade

In the period after the 1990s of the 20th century, Serbia opened up to foreign investment. The growth of investments is credited to a series of measures taken to establish a favorable climate for investment. A significant increase in investments is recorded in the past decade. According to the Serbian Chamber of Commerce in the period 2002-2011, the movement of FDI was as follows (see Figure 1).

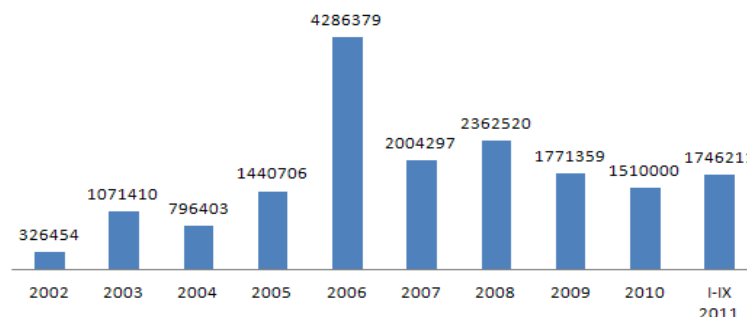


Figure 1. The movement of FDI in the period 2002-2011. Source: Serbian Chamber of Commerce, 2012.

As it can be seen based on Figure 1, in 2006 there was a sharply increase in the volume of foreign investments. The reason for such a large increase is the restructuring of large state-owned companies by FDI. In the period after 2006, the amount of FDI is continuously moving nearly two million U.S. dollars.

Economic development in the last decade is characterized by inadequate investment in production. The inflow of foreign funds in Serbia after 2000 was characterized by predominantly investing in infrastructure and energy, while very little is spent directly in production. Only in 2006 has taken steps to encourage green field investments, and also tenders were called for some concessions. In the aim of faster economic development, it is necessary in addition to encouraging investment in the form of loans from international and regional financial organizations, government measures etc.. It is necessary to take into account the sectoral direction of the investment, they must be directed in production capacity, which must be export oriented. Investing in production from domestic and foreign sources, primarily also from FDI, will enable Serbia to join the process of faster development (Nikolić, 2011; Quaterly Monitor of Economic Trends and Policies, 2011).

If a comparative analysis is made with other post-socialist countries in 2009 and 2010, as it can be seen from Figure 2, the extent of Serbian FDI is in the sixth place among developing countries.

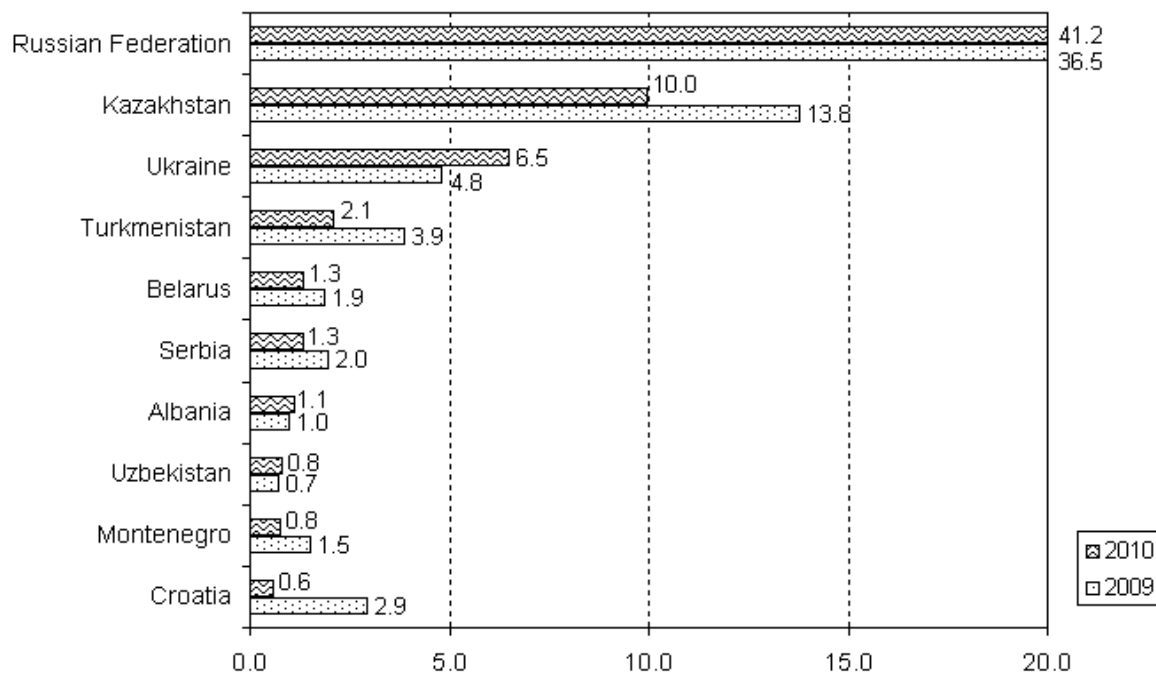


Figure 2. Transition economies: Top 10 recipients of FDI inflows, 2009, 2010 (billion of dollars). Source: UNCTAD, World Investment Report 2011.

Based on Figure 2, it can be seen that the inflow of FDI into the Russian Federation was the largest, with most investments in infrastructure and manufacturing, on the second place Russia is followed by Kazakhstan, which is attractive for FDI because of the great natural wealth that is insufficiently exploited. If you look at Serbia, it can be concluded that the lead among the neighboring countries (Montenegro, Croatia, and Albania), although in 2010 compared to 2009, the volume of FDI has declined. This decrease in value was due to effects of the financial crisis which affected the monetary sector of Serbia and therefore reduced the investors' interest in investing in Serbia.

FDI in Serbia in 2011

Based on the report of the National Bank of Serbia in 2011, the level of investment has increased compared to the year 2010. The total amount of FDI in 2011 from January to November was amounted to 1,026.8 million of dollars, while in 2010 the relevant period amounted to 2,142.5 million dollars. The structure of this investment is given in Figure 3.

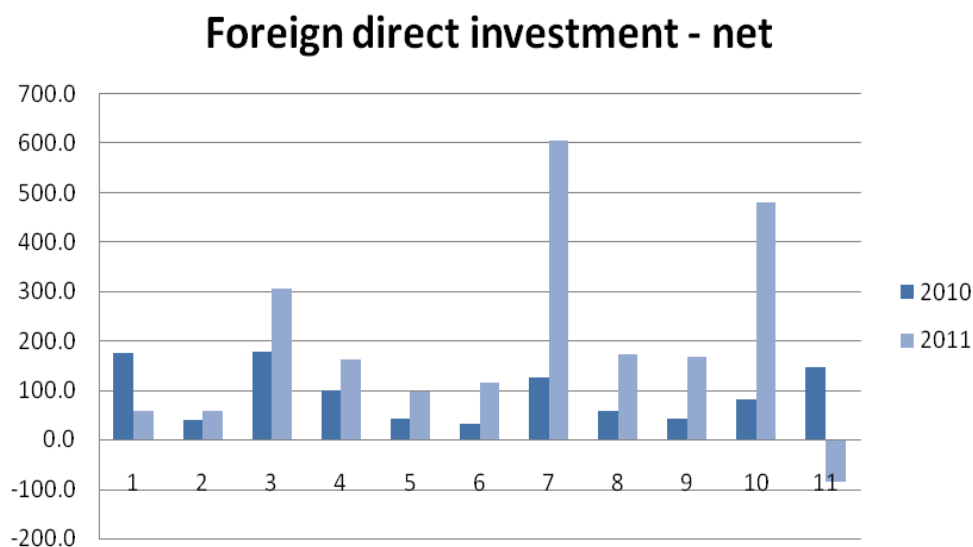


Figure 3. Amount of FDI in 2010 and 2011. Source: Authors calculation based on the report of the National Bank of Serbia.

The inflow of investments in the first three quarters in 2011, according to the National Bank of Serbia, was most intense in the retail sector with 39.5% of total inflow, followed by manufacturing with 21.1%, and financial and insurance activities with 11.1%. The investments in the manufacturing sector are so low that they do not reach 10% of total inflows, and as such can be considered as insignificant. From the standpoint of economic development in Serbia this is very important and gives an indication that in the future should be taken measures to encourage investment in productive activities in order to increase the growth of the gross domestic product based on the productivity and directed the country towards to export orientation.

Important Factors That Implicate the Balance of Investments in Serbia

It is not enough to understand the crucial importance of FDI in the economic system of the country, it is necessary to take concrete measures to attract them, because there are very competitive countries in the environment.

Experts claim that Serbia lacks the political will to be instantaneous and very quickly overcome much of an obstacle for investors. David Lyngtoe from the company Baines Babic (Halifax Consulting) said a few basic things that Serbia needs to be more desirable for business:

- Stability—whether the economy is stable, if there are unforeseen developments in inflation rate;
- The justice system must be much more efficient;
- Regulations are still unclear and not transparent to the uninformed investors;
- Flexibility of administration, for what was cited as an example of procedures for hiring and firing workers, which complicate the hiring of workers for short periods (one, two, or three years) to execute a

particular project (he reminds that this is the simplest in Denmark, which has one of the lowest rates unemployment in the world);

- Education staff is working out of date, and the education system in Serbia has long been building staff that learn to memorize, but not to develop skills.

The Development Strategy and Policy of the Republic of Serbia from 2011 to 2020 (Government of Republic of Serbia, 2011b) analysis states that the most important factor is creating market environment in order to attract foreign investors. This influence of economic environment is given in Table 1.

Table 1

The Influence of Economic Environment on the Competitiveness of the Economy

	Pull motives (pull)
Political influence	A stable political situation, liberal legislation, dominant business-oriented culture, the growth of credit, regulated market
Economic influence	The good economy, high potential of growth, low operating costs, market development, opportunities for real estate investment, large market, a favourable exchange rate, depressed stock prices
Social influence	Positive social environment, positive demographic trends, population growth, reduction of social benefits
Cultural influence	Well-known reference points in the cultural milieu, attractive composition of cultural values, innovative business culture, fostering corporate culture, homogeneous cultural environment (friendly segments)
Competitive structure	Market niches, ownership of capacities, the possibility of expansion through copying, favourable operational conditions

The creation of a favorable climate for investment, both foreign and domestic, is a major challenge for all countries as increased globalization and competitive business pressures provide the framework and need for continuous improvement in both the overall enabling environment for business and company performance. Governments have a key role at the macro level in providing stability and in improving the overall environment for business while competitive market pressures are demanding continuous improvement in efficiencies, increased flexibility, and effectiveness by company management.

New Trends of Investment in Serbia

Most of the countries in Southeast Europe have underdeveloped financial markets funds as well as investment funds as an alternative source of capital raises. In some countries, the importance of the investment funds is realized earlier while in Serbia the trend of intense stimulation of these funds is relatively new and is related to the last few years. Among the countries in region that have so far proved greater amount of investment by venture capital funds, it can be highlighted Poland, Hungary, Romania, Slovakia, Ukraine, Croatia, and Slovenia.

In order to stimulate the development of venture investment in the territory of south-eastern Balkans, SEAF (fund to assist small businesses) opened a representative office SEAF South Balkan Fund (SBF) in October 2005 in order to place private equity investment in Serbia, Macedonia, and Montenegro. Subsequently, in 2010 was the Serbian Association of private equity formed (SPEA—Serbian Private Equity Association) to promote and attract foreign investors, private equity, and venture capital.

In Serbia the SEAF South Balkan Fund is conducting the business as a foreign company's office and it is not registered as an investment fund. According to the available information, there are several procedural problems to be solved for the registration of venture capital funds (VCFs). Firstly, private equity and venture capital investment funds are not recognized by the investment funds law. Secondly, during the investment process it is hard to explain to the authorities the role of a venture or private equity investment fund as a new

partner in the company, its rights and obligations. These are some reasons causing the low level of attractiveness to venture capital investment funds (Makojević, 2009).

According to a survey conducted by Alexander Groh, Heinrich Liechtenstein, and Karsten Lieser, Serbia is at place 89 of attractiveness to attract venture capital and private equity funds. Countries in the region that have gone through a similar transformation of socio-economic environment of business have a much better rank in relation to Serbia. For example comparing to Poland which is on 28 place, the Czech Republic and Slovakia which are on 35 and 44 place; Hungary, Slovenia, and Croatia which are on 42, 45, and 65 place respectively, Serbia is much more behind them and has to do more on the attractiveness of its own. The first and fundamental prerequisite for attracting venture capital and private equity funds is to create a healthy business and economic environment.

It is evident that in Serbia there is not enough capital but there are some prospective sectors to attract venture investors, but the state must make several steps to make Serbian market more attractive for foreign investors. The first changes should be done in the legal framework concerning investing through investment funds. Some other issues are the taxes. Investors are looking for the country where they can earn but also pay low or no taxes. Venture capital and private equity investment funds are interested in small and medium companies with growing opportunities, so one of the suggestions is to make tax free for the investment in start-up small and medium companies. In that way is the state taking risk (sharing the risk with the investors) by not collecting taxes immediately, hoping that the deferment will promote higher tax collection in future. The state can also support these investment opportunities through venture capital and private equity funds by creating a state investment fund which should be considered as a partner to the venture and private equity investors.

Conclusions

The attraction and retention of foreign investment is a key objective in many countries as it is well recognized that foreign investment has the important potential to create incremental and sustainable jobs, they increase exports, transfer technology, and business knowledge, enhance competitiveness, boost overall productivity, and ultimately reduce poverty through overall economic growth and development. All developing countries should focus on creating a favorable climate for attracting foreign investment in form of FDI or in form of more and more increasingly widespread VC/PE funds in order to take all the advantages of the capital inflow. The most important factors are related to macroeconomic and political stability, but a major role of attractiveness play also institutions (in first line state owed institutions) which encourage the inflow of investments.

In recent years, Serbia has undertaken and implemented a large number of measures to stabilize economic conditions and in this way to attract foreign investment. A major contribution was given by the government's agency for investment promotion and export opportunities, which provides assistance to investors in the pre-investment, investment, and post-investment phase. SIEPA facilitate foreign investors in many ways to invest in Serbia, because it provides advisory services related to legislation, agreements, and exemptions (Siepa, 2012). It also releases funds to investors, pointing to favorable sources of financing.

Therefore, Serbia has fulfilled a large number of conditions for attracting foreign investment, which can be observed according to the statistics of growth inflows from FDI. To further encourage foreign investment, but in first hand to encourage the development and activity of VC/PE funds and in that way to stimulate the SME

business sector, Serbia should focus on the stability of monetary and fiscal system. Also, it should not forget the influence of the political risk which has always been strong in the region. In favor of stabilization of conditions is getting the nominations for membership of the EU, which in future can contribute to a greater inflow of foreign investment in Serbia.

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Small and Medium Enterprises (SMEs) and Competitiveness: An Empirical Study

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Globalisation and competitiveness affected the way of enterprises undertake innovation, particularly in the case of Small and Medium Enterprises (SMEs). According with European Commission (2013) in Europe 99% of the enterprises is SMEs. SMEs all over the world are considered as the lifeblood of the economies. The importance of this research is justified by the predominance of SMEs that represents the majority of enterprises in Portugal. SMEs contribute to the creation of jobs, as well as to the competitiveness of the economies, specially, in crisis time. This study has two main objectives; firstly propose a literature review focused on competitiveness of SMEs. Secondly analysis a sample of 23 enterprises identified as leaders of Portuguese SMEs in 2012. The data considering a ranking list of the largest 1,000 Portuguese SMEs in 2012, published by Exame (2013). This analysis considers some SMEs features such as, sales, market share, dimension, and sector. Additionally this research presents a SME case included in this database. Through the application of a questionnaire the study provides a complementary micro perspective of the factors that influences enterprises competitiveness. The questionnaire is divided into three parts: Part one refers to the characterization of the enterprise; Part two assesses the entrepreneurial competitiveness, considering nine questions to assess performance, six questions to assess internal processes and four questions to understand the relations with customers; and part three analyses the diffusion of innovation through three questions. Finally the study provides important clues relevant for the development of public policies that can support the innovation and competitiveness of SMEs. Moreover the discussions highlight some variables approached in literature review considered as pertinent in the case of innovative SME due to their contribution to exports and to economic growth.

Keywords: competitiveness, diffusion of innovation, performance, Small and Medium Enterprises (SMEs), Research and Development (R&D)

Introduction

Small and Medium Enterprises (SMEs) represent a large part of all enterprises in global economies.

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Studies' concern competitiveness of SME become crucial to a better understanding of the conditions that affect positively or negatively these enterprises and consequently the competitiveness of the countries in the global market.

This study intends to present a literature review focused on competitiveness of SMEs. And, also analyze a sample of 23 enterprises identified as leaders of Portuguese SMEs in 2012. The data used in this research were collected from a ranking list of the largest 1,000 Portuguese SMEs in 2012, published by Exame (2013). To complement this research, this paper presents a case of SME (included the large database) that provides a complementary micro perspective of the factors that influence enterprises competitiveness.

SMEs and Competitiveness

Competitiveness is a popular concept across different levels of studies and involves different disciplines such as comparative advantage or price competitiveness perspective, strategy, and management perspective, as well as historical and socio-cultural perspective (Nelson, 1992; Waheeduzzaman & Ryans, 1996). This concept is also understood as the ability to increase market share, profit, growth, value added and to stay competitive for a long term (Ramasamy, 1995).

Studies developed for the research of O'Farrell, Hitchens, and Moffat (1992) showed a relationship between sources of competitiveness and firm performance, considering price, quality, design, marketing, and management. Additionally, Slevin and Covin (1995) measured the "total competitiveness" of SMEs, attending to several factors, such as, firm's structure, culture, human resources, and product/service development. Other theoretical approaches (Stoner, 1987; Bamberger, 1989; Pratten, 1991; Chaston & Mangles, 1997) highlighted a number of firm specific factors respectively, financial, human and technological resources, organizational structure and system, productivity, innovation, quality, productivity, image and reputation, culture, product/service variety, flexibility, and customer services.

SMEs represent more than 90% of the enterprises in many countries (Gunasekaran, Rai, & Griffin, 2011; Poon & Swatman 1999; Cull, Davis, Lamoreaux, & Rosenthal, 2006; Ozgulbas, Koyuncugil, & Yilmaz, 2006). Furthermore, most of SMEs experience a lack of market power as well as market turbulent and become more vulnerable to external influences than larger companies. Also internal sources of competitiveness are stressed in literature, specifically the human factor, i.e., the role played by the owner/manager and their skills and experience (Stoner, 1987). However, Salavou, Baltas, and Lioukas (2004) point out some advantages of SMEs over large companies due to its size and flexibility in adapting to changes such as, market and learning-oriented and when facing strong competition, they tend to be more innovative and resilient.

Figure 1 presents some factors that influence the competitiveness of SMEs. The factors influencing competitiveness of SMEs can be divided into two groups, external and internal factors. Measuring competitiveness is a difficult task, because few values, indicators, or features can be quantified and are accessible. Most of them are not quantifiable or accessible and have to be identified at corporate level.

Additionally, literature identifies other factors that affect SME. Egbu, Hari, and Renukappa (2005) emphasize the succession planning in the case of family business.

Levy, Loebbecke, and Powell (2003) argue that SMEs are excellent knowledge creators, but reveal limitations in the knowledge retention. Jorgensen and Knudsen (2006) refer other factors relevant to competitiveness of SMEs, such as their capabilities to action in global markets. For instance, the markets for semi-manufactured goods become more global, and SMEs are more and more integrated into global value

chains. In the literature it is possible to find some general questions: Is it possible (or not) to find a consensus about the role of SMEs to the national economy? What are their contribution to Gross Domestic Product (GDP) and to job creation? Globalization highlights the role of the global markets that could increase the opportunities for SMEs (Gradzol, Gradzol, & Rippey, 2005; Karaev, Koh, & Szamosi, 2007). While, to compete in the global market, SMEs have to enhance their individual competitiveness (Fassoulsa, 2006) as well as obtain advantage and exploit synergy effects by cooperative relations with other SMEs and related partner institutions.

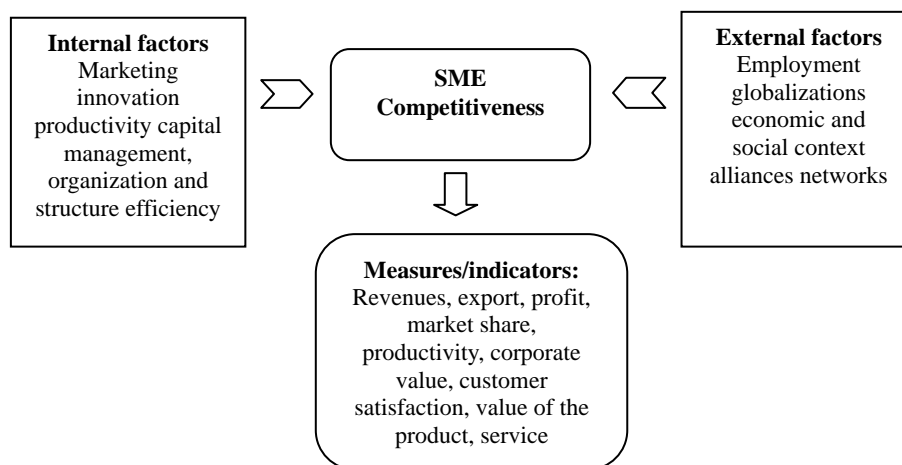


Figure 1. SME competitiveness. Source: authors.

Also other factors can be found in literature that reveals important limitations concerning SME research. Although the significant importance of SMEs and their contribution to economic growth are huge they still faced numerous challenges. These challenges are related with the access to finance or poor management skills, which is a result of lack of adequate training and education. These factors contribute to the high rates of business failure and represent limitations in their entrepreneurial growth. The background of the top management team is considered as a key factor that influences SME survival and development (Lu & Beamish, 2001; Stoian & Rialp-Criado, 2010).

Nevertheless, research about Portuguese SME is more focused on some fields, such as internationalization (Oliveira & Teixeira, 2011), innovation (Trigo, Calapez, & Santos, 2009), or in capital structure and profitability (Nunes, Serrasqueiro, & Leitão, 2010; Serrasqueiro & Nunes, 2012). This gap justifies the purpose of other empirical studies applied to SME considering other relevant fields of management studies.

Empirical Study

Methodology

In order to achieve the research purpose, an empirical study was developed considering two main parts: Firstly, it studies a sample of 23 enterprises identified as leaders of the 1,000 Portuguese SMEs in 2012. The data was collected by Exame (2013) and include the biggest 1,000 Portuguese SMEs in 2012; Secondly, it analyses a specific case of one enterprise from the data of 23 leaders SMEs, this analysis is based on a questionnaire applied to the SME in order to collect micro information considering a set of variables relevant to the research. The questionnaire is divided into three parts: Part one refers to the characterization of the enterprise; Part two assesses the entrepreneurial competitiveness, considering nine questions to assess

performance, six questions to assess internal processes and four questions to understand the relations with customers; and part three analyses the diffusion of innovation through three questions. The questionnaire uses a Likert scale with seven degrees (one represents very lower and seven very higher). All questions were made considering the comparison of the analyzed SME with the other competitive SME from the same sector in the last three years. The questionnaire was sent and receipt during March of 2013.

As already referred, the first empirical research uses a data collected in 2013 considering a ranking list published of the largest 1,000 Portuguese SMEs (Exame, 2013). The 1,000 largest Portuguese SMEs were selected based on the following criteria:

- (1) Less than 250 employees;
- (2) Sales less than or equal to 50 million Euros;
- (3) Liquid assets equal to or less than 43 million Euros;
- (4) Not to be detained for more than 50% by another company unless that mother company is also SME;
- (5) Not belong to the financial sector.
- (6) Enterprises were classified into 27 branches of activities and considered several indicators, such as:
 - Localization/region: C-Centre, LVT-Lisbon and Tagus Valley, N-North; Ac-Azores;
 - Gross added value for sales: measures contribution of the enterprise to the economy for each euro sold, in percentage.
 - Gross added value: refers to the sum of sales and services, work for the company, changes in production, subsidies for exploration, and additional revenue less intermediate consumption and supplies and services;
 - Sales: sales of products and services;
 - Sales growth: refers to the increased sales and services between the current and previous year in percentage;
 - Labor productivity: respect to gross value added per worker, measures the efficiency of enterprises in the use of human resources.

SME Leaders Description

This section presents a characterization of the Portuguese SME leaders in each sector. It is possible to find in Table 1 the relevant indicators to SME leaders considering: region, sales, sales growth, net profit, GVA/sales, gross value added, productivity, and number of employees. Attending to sales growth 19 SMEs reveal a positive growth and four of them present a negative growth. However, a high percentage of these enterprises refers to service sector with value of 227.8%, 65.66%, and 52.88%. The absolute values of the sales are in the most SMEs between 10 and 15 million. In general, the SMEs with a large number of employees present lower values of productivity (lower than 100). Concerning other financial indicators it is not possible to find patterns to group SMEs.

Table 1

Relevant Indicators to SME Leaders

Region	Sector	Sales	Sales growth	Net profit	GVA/sales	Gross value added	Productivity	Number of employees
C	m	30,464	4.7	1,812	26.41	8,046	43	187
LVT	s	27,250	44.9	223	3.44	938	39	24
C	m	25,591	52.88	8,774	49.49	12,667	264	48
C	m	20,257	19.19	428	35.36	7,163	44	163
LVT	s	18,057	31.21	383	3.50	632	158	4

(Table 1 continued)

Region	Sector	Sales	Sales growth	Net profit	GVA/sales	Gross value added	Productivity	Number of employees
N	m	18,850	13.68	939	26.12	4,925	31	159
N	m	22,803	13.88	2,345	20.75	4,733	93	51
LVT	m	22,433	6.3	5,392	65.56	14,709	108	136
C	m	16,779	42.69	1,370	19.68	3,303	165	20
LVT	s	15,366	3.81	3,113	52.78	8,111	213	38
N	s	14,867	65.66	1,567	36.83	5,476	66	83
N	m	14,483	-43.78	2,299	23.19	3,360	560	6
C	s	14,122	-9.99	1,480	11.81	1,669	238	7
N	s	13,979	227.76	744	10.01	1,400	27	52
LVT	s	11,906	-6.28	954	25.64	3,053	38	80
LVT	m	11,690	92.31	798	16.50	1,929	48	40
LVT	s	11,153	4.88	1,132	21.54	2,403	89	27
N	m	11,000	10.03	3,424	48.91	5,381	163	33
AÇ	s	10,486	4.63	462	27.68	2,903	29	100
LVT	s	10,423	11.53	263	44.01	4,588	42	108
N	s	10,290	17.61	150	25.22	2,596	19	140
LVT	m	10,213	-25.41	1,413	25.43	2,598	649	4
C	m	10,211	4.49	792	34.90	3,564	30	120

Note. Source: Exame, 2013.

Figure 1 presents the distribution of the SMEs and it's possible to note that 39% of Lisbon and Tagus Valey are situated in North. This tendency follows national distribution of the enterprises in Portugal, where mostly enterprises are situated in Metropolitan areas of Lisbon and Oporto (north of the Portugal).

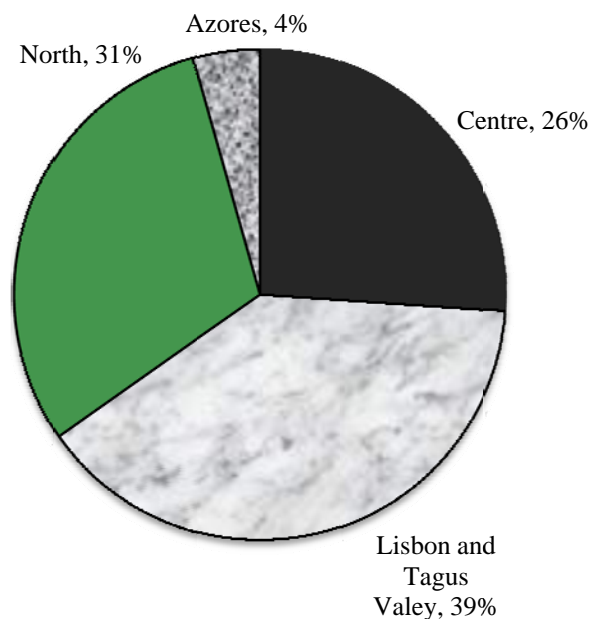


Figure 1. Region. Source: Exame, 2013.

Figure 2 presents the distribution of the firms according to the sector (manufacturing and services) cross by size. The size included the division attending the number of employees: microenterprises (less than 10 employees),

small enterprise (between 10 and 49 employees), and medium enterprise (between 50 and 249 employees). Figure 2 allows noting that most of the SMEs in the data are medium enterprises in both sectors.

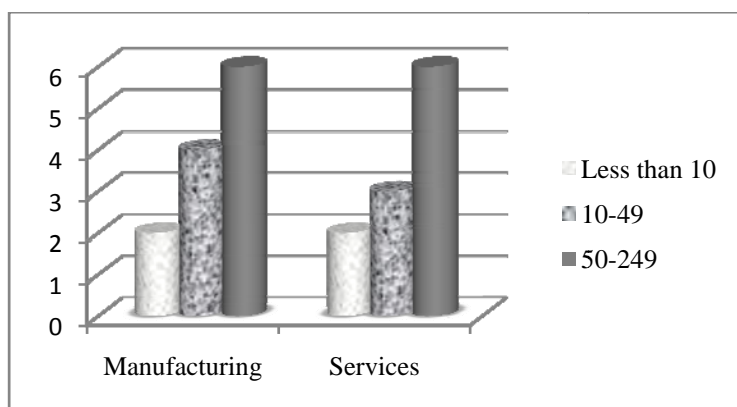


Figure 2. Size by sector. Source: Exame, 2013.

A Micro Analysis of a SME

In this section, the paper presents some results applied to a case from the 23 leaders SME. The case aims to allow the understanding of some aspects related with SME competitiveness in a micro perspective. The micro perspective allows a better understanding of some phenomenon and behavior not detected in macro studies. Complementarily, the micro perspective allows a frame of an enterprise and proposes some clues and explanations that justified the performance indicators presented in Table 1. The questionnaire was divided into three parts. The first part presents the description of the SME studied. These enterprises belong to manufacturing sector, produce and distribute medicines, and are included in chemical industry. This SME is located in Lisbon region, exports about 12% of their products do not have investment in R&D and the main export market is Spain.

The second part refers to assess of the entrepreneurial competitiveness considered performance measures attending to apprenticeship, growth, internal process, and clients. Table 2 presents in average, the values grouped according to the dimensions of competitiveness studies. It is important to note that the higher average value refers to clients with a value of 4.5 and the lower refers to internal process with 3.5 (lower than four, the median of the scale); the other values are very close with the median.

Table 2

Results of the Answers in Average (Scales 1-7)

	Entrepreneurial competitiveness			Diffusion of innovation
	Apprenticeship and growth	Internal process	Clients	
	5.22	3.5	4.5	4

Note. Source: Information collected by the authors.

Additionally attending to the answers, it is important to point out some outliers for each part. Concerning apprenticeship and growth, the experience of their human resources and the lower turnover rates of the employees reveal values of 6 in the scale, also the productivity present a value of 5, higher than the median. In this part, the lower value concerns the infrastructures and facilities to support R&D and innovation. The results to internal process, also presents some outliers, the lowers with the value of 2, refers to investment in R&D and

patents and the highest with value of 5 in both of them respect to marketing innovation and customer services. In section of the question related with clients, satisfaction with service and customer loyalty point 5 in the scale, revealing the preoccupation of the firm with clients and demand side of the business. Finally the third part analyses the diffusion of innovation and presents an answer with a higher value 5, respecting to cooperation with other partners and institutions to develop R&D.

Conclusions

In summary, it's consensual that globalization and competitiveness affected the way of enterprises undertake innovation, particularly in the case of SMEs. These enterprises play an important role in several economies and the studies about SMEs and competitiveness are extremely suitable. This research proposes an empirical study that analyzes a sample of 23 enterprises identified as leaders of Portuguese SMEs in 2012. Additionally the empirical study applied a questionnaire to an enterprise in order to have a micro perspective of the factors that influence competitiveness.

The results of the empirical study to the 23 leaders are divided almost into two equal parts in two sectors, manufacturing and services, respecting performance indicators revealing similar patterns. Most of them located in urban regions are medium enterprises and are situate in similar intervals with respect to the sales, sales growth, or productivity. Concerning to the size is important to note that inside the 1,000 SMEs of the data the leaders are the largest, suggesting that the scale could be crucial to sustainability and competitiveness of Portuguese SMEs.

The additional microanalysis allows a better understanding of some process inside a SME and reveals some aspects important to a future reflection. It was possible to understand the low auto perception of the management concerning the internal process and resources affect to R&D and patents. These SMEs produce mainly generic medicines and this strategy can justify the lower scores related with internal process due with their outsourcing strategy. The product development and R&D investment are low because they are focused on manufacturing medicines developed by other enterprises with a high concern about lower costs and higher quality.

Moreover, the studied SMEs reveal a higher concern with clients (satisfaction, loyalty, and services) and assume that develop marketing innovation directed to the market. These results suggest that the dependency of this kind of enterprise with the demand and maybe a push innovation model is our perception that inside the data most of them could reveal similar behavior.

Finally, it is also interesting to highlight the model of cooperation to develop innovation, assuming the importance of the cooperation with other institutions and research centers.

SMEs are drivers of economic growth. A healthy SME sector contributes prominently to the economy through creating more employment opportunities, generating higher production volumes, increasing exports, and introducing innovation and entrepreneurship skills.

Future research will aim to enlarge the number of SMEs inquired and compare results using a multivariate analysis to search similar patterns and behaviors and segmented according to size, sector, and region.

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Company Value and Employee Satisfaction: Theoretical Analysis and Empirical Findings

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Employee satisfaction and its potential impact on business and company success have been in the focus of organizational and managerial practise and research ever since. This paper outlines the theoretical framework of this particular cause-effect proposition, and further examines if there is empirical evidence to substantiate the underlying research hypothesis, saying that increasing degrees of employee satisfaction have a positive impact on the company value. The company value can be measured by the equity value of a firm. With the primary data analysis, the authors compared 11 companies which took part in the Great Place to Work (GPTW) Contest in 2007 and 2009 (only in 2009) regarding their equity values and GPTW scores. The figures of these companies were provided to the authors in an anonymous form. The authors had no influence on the number of companies the GPTW Institute provided to them. The GPTW Institute tried to find companies which attend both contests and also show their financial data in the “Elektronischen Bundesanzeiger”. This paper aims to foster these results with some additional primary statistical analyses for hypothesis testing. For this investigation, the authors conducted various types of statistical procedures which seem to confirm the underlying proposition. With different types of correlation analysis, the relationship between equity value and GPTW score was elaborated. By regarding the absolute average Earnings Before Interest and Tax (EBIT) and equity value of the eleven out of the 100 best companies, some differences can be pointed out by setting them in comparison to 30 randomly selected companies from Germany.

Keywords: employee satisfaction, company value, equity value, regression analysis, cause-effect relations

Introduction

Numerous studies and authors support the proposition that there is a cause-effect relation between employee satisfaction (among other influencing variables like customer satisfaction, leadership, technology etc.) and the financial results of companies (Heskett, Jones, Loveman, Sasser, & Schlesinger, 1994; Hurley & Estelami, 2007). The main hypothesis of the underlying research paper is that “Employee Satisfaction has an Impact on the Level of Company Value”. Based on a theoretical investigation, a secondary data analysis from the United States of America (USA), and a primary data analysis from Germany, the authors intend to demonstrate that there is a

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dependency between employee satisfaction and company value (Brenninger, 2011b; 2012). The research resumes that employee satisfaction can be managerially handled by business management (Rosenstiel, 2003; Malik, 2006) and thus also the financial results can be influenced.

The referred secondary data analysis in this article is based on studies from the USA, especially from Smithey-Fulmer, Gerhardt, and Scott (2003), and Romero (2004) from University of Texas-Pan American. Those studies show that there is a cause-effect relation between employee satisfaction and company value.

In an additional primary data analysis, the authors compared a sample of German companies, which took part in the “Great Place Contests” in 2007 and 2009 regarding their equity values and Great Place to Work (GPTW) scores. The figures of those companies were provided to the authors in an anonymous form. The authors had no influence on the number of companies the GPTW Institute has made available. The GPTW Institute tried to select companies, which attended both contests and also showed their financial data in the “Elektronische Bundesanzeiger” (the “Elektronische Bundesanzeiger” is the official statistical source of the German Government). Generally, it can be stated that after comparing the results of the GPTW contests in 2007 and 2009 and after analyzing the financial data of the companies, the research shows evidence of an impact of employee satisfaction on company value.

With the additional primary statistical analysis, the results could be further corroborated and the basic hypothesis that the “degree of employee satisfaction has an impact on the level of company value” was substantiated.

Framework of Research

The basic research hypothesis reads as follows: “the degree of employee satisfaction has an impact on the level of company value”.

The “theoretical framework of research” will deal with various elements of employee satisfaction and financial results of business firms.

There is a proposition that increasing customer satisfaction depends on high motivated employees and staff motivation is based on satisfaction with their working circumstances and conditions (Holtbrügge, 2007; Heidecker, 2003).

In the first part, the authors want to point out the most relevant factors which are “responsible” for employee or job satisfaction. In the first step, the influencing elements on employee satisfaction are analysed. In the first place, leadership styles, working circumstances, payment, training and education, management styles, and other relevant factors are highlighted. Other factors like industry branches, market conditions, employment rate, and other aspects which cannot be influenced by managers were not neglected but taken into consideration.

Figure 1 gives an overview of the fields of research regarding employee satisfaction. The results are based not only on literature research, but also on the authors’ business experience for more than 20 years.

This first part of the research provides evidence that employee satisfaction can be influenced by management. Especially leadership style and working circumstances are relevant factors of business success and productivity. In the authors’ opinion, the leadership style generally has a very high impact on job satisfaction. Comparing the different leadership styles, the most positive impact on employee satisfaction can be reached via a participative and motivating leadership style (Weisbord, 2005).

In the second step, the literature research is aiming to explore the relation between employee satisfaction, sales turnover, financial results, and company value. Most studies give evidence that there is a “positive

correlation” between the level of employee satisfaction and the financial results. But there are also a few studies claiming that there is no such relationship (Keiningham, Aksoy, Daly, & Perrier, 2006).

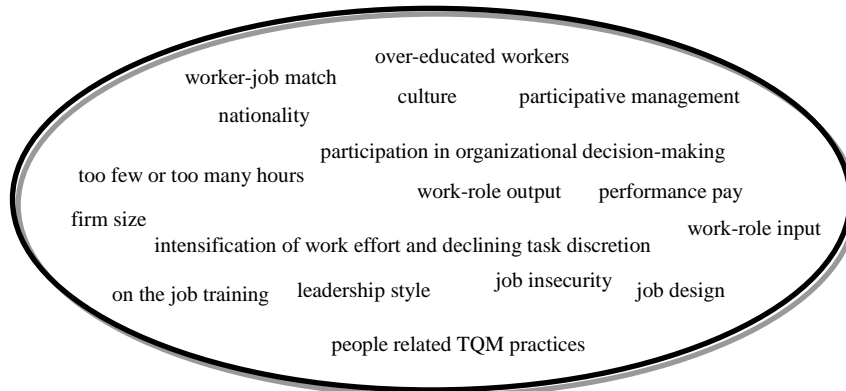


Figure 1. Dependencies and relevant factors of employee satisfaction and dissatisfaction. Source: Brenninger, 2011a.

Therefore it is necessary that the relation between employee satisfaction and company value has to be tested also with hard figures based on an overall accepted measurement for employee satisfaction. In the USA, a study which also uses the results of the GPTW Institute and respective financial data has already been done and will be elaborated in the secondary data analysis.

Figure 2 exemplarily shows the set of influence on employee satisfaction and their impact on the level of company value (Brenninger, 2011b).

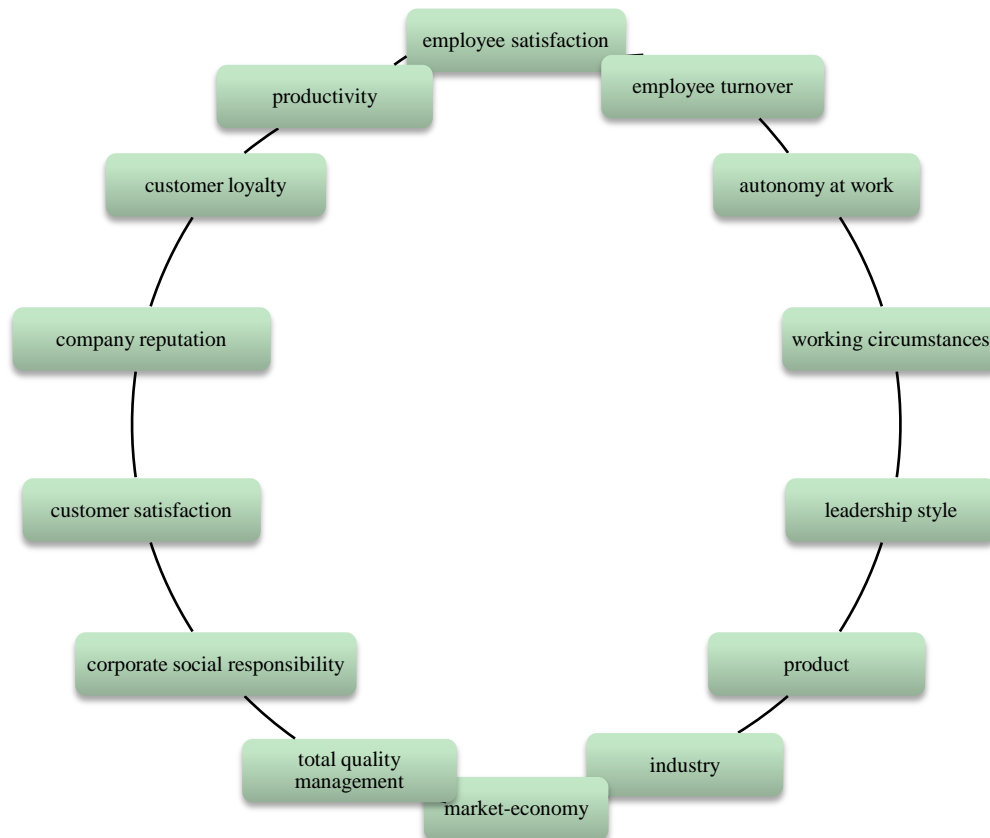


Figure 2. Issues influencing on financial results. Source: Brenninger, 2011b.

Theoretical Model and Set of Hypothesis

The second part “Theoretical Model and Set of Hypothesis” deals with the independent variable “employee satisfaction”, the description of the GPTW Contest, the dimensions of a GPTW, the measurement of employee satisfaction, and approaches for computing the company value as the dependent variable.

The independent variable employee satisfaction will be measured by the results of the GPTW Contests in 2007 and 2009.

The GPTW[®] Institute, Inc. is a research and management consultancy firm based in the U.S. with international affiliate offices throughout the world. At the GPTW[®] Institute, they have been dealing with employees’ affairs and the evaluation of employers since 1980, in order to understand what makes a workplace great.

The GPTW Institute measures the following five dimensions of employee satisfaction with a confidential questionnaire of about 60 questions:

- Credibility: Measures how employees see their managers in terms of confidentiality and reliability;
- Respect: Measures the degree how employees feel being respected from their managers;
- Fairness: Measures how employees feel being treated fair from their managers;
- Pride: Measures the solidarity from the employees to the team and the company;
- Camaraderie: Measures the quality of relationship between the employees.

Based on this dataset the GPTW Institute randomly selected a sample of companies for the authors’ analyses which could also be found in the German “Elektronischer Bundesanzeiger”.

The main goal of this research is to test whether there is an evident relation between the level of employee satisfaction and the respective company values. Therefore the authors calculated the company values for this sample of companies which are among the 100 best in the GPTW Contest in Germany in those years.

There are several approaches for computing the company value (see Figure 3). For most of these, a lot of financial data from balance sheets and profit and loss accounts are necessary. Most of these data, especially future based planning data, are not available in the “Elektronischen Bundesanzeiger”. Therefore, this study will use the EBIT-Multiple Model (developed by HJK Management Consultancy).



Figure 3. Company value model. Source: Ballwieser, 1993; HJK Management Consultancy, 2012.

Figure 3 gives an overview of possible calculation methods for computing the equity value. It depends on the availability of data, to determine which model is appropriate and fits best. In practice and in real world,

businesses EBIT multiples are used very often and even though no future planning material is available, the company or equity value can be estimated.

Empirical Investigation

The third part of this study, the “Empirical Investigation”, is based on a secondary data analysis from the USA, and the financial results of the randomly selected companies, which attended the GPTW Contest in Germany in 2007 and 2009, and on additional primary statistical analysis with data from German companies.

Secondary Data Analysis From the USA

In this secondary data analysis from the USA, Ingrid Smithey-Fulmer from the Edi Broad Graduate School of Management Michigan State University, Barry Gerhard from the School of Business University of Wisconsin-Madison, and Kimberly S. Scott from the Wm. Wrigley Jr. Company conducted a study named: *Are the 100 best better? —An empirical investigation of the relationship between being a GPTW and firm performance.*

They suggest that positive employee relations effectively serve as an intangible and enduring asset, and may, therefore, be a source of sustained competitive advantage at the firm level. They surveyed a number of measures of firm-level performance and conceptualized how each measure is likely to be affected by highly positive firm-level employee relations. They then empirically investigated whether positive employee relations are related to firm performance, focusing on publicly traded firms, including the 100 “Best Companies” to work for in America. The relative performance of these Best Companies is examined via comparisons to both, companies in the broad market and a group of matched firms. Their analysis suggests that companies on the “100 Best” list enjoy not only highly positive workforce attitudes, but also performance advantages over the broad market, and in some cases, over matched firms (Smithey-Fulmer et al., 2003).

In their study Smithey-Fulmer et al. (2003) formulated three hypotheses:

Hypothesis 1: Companies included on the 100 Best list will exhibit stable levels of positive employee attitudes over time.

Hypothesis 2: Companies included on the 100 Best list will exhibit better performance relative to other companies because of their emphasis on employee relations.

Hypothesis 3: The superior performance of the 100 Best firms relative to other companies as captured by Return on Assets (ROA) will be more persistent over time than superior performance as measured by market-to-book value of equity or by annual stock returns.

The January 12, 1998 Fortune article *The 100 Best Companies to Work for in America* (Levering & Moskowitz, 1998) was the source of the Best Companies that are in the focus of this study, 238 companies were invited to submit information supporting inclusion in the 100 Best. This particular group was selected by the authors Levering and Moskowitz (1998), from their own “database of more than 1,000 companies”, because they met certain minimum criteria (firms had to have been in existence for at least 10 years and employ a minimum of 500 people) and because they were considered as “most viable candidates for the list”. Of those invited, 161 agreed to participate in.

The majority of employee survey questions used in selecting the 1998 100 Best list were created and administered by the GPTW Institute® of San Francisco, and this instrument is referred to as the GPTW® Trust Index©. Their Web site (Retrieved from www.greatplacetowork.com) describes a number of sample items from the survey along with the dimensions they intended to capture.

They used the 100 Best list as a starting point for their analysis of financial performance; they eliminated privately held companies, nonprofit organizations, public utilities, and financial institutions from their analysis. To be included in the study, they required that each of the 100 best companies had compustat data available in the matching year (1997, the year prior to publication) to facilitate the selection of a matching company. The final sample of Smithey-Fulmer et al. (2003) consisted of 50 companies from the January 1998 100 Best list.

In their study Smithey-Fulmer et al. (2003) elaborated the results and pointed out some issues for discussion and future directions.

They found that organization-level employee attitudes of the 100 Best firms were both highly positive and stable over time (supporting Hypothesis 1), bolstering the case for the characterizations of positive employee relations as strategic assets as described in the strategic management literature. Then they found that accounting ratios (ROA and market-to-book value of equity) of publicly traded companies included in the 100 Best list were generally better than those of a matched comparison group, supporting Hypothesis 2 and establishing a link between employee attitudes and organization-level financial performance, which had previously been unstudied. As for stock returns, they found that the 100 Best companies outperformed the broad market when considering cumulative (longer-term) returns, though not consistently for annual returns. They did not find that the 100 Best significantly outperformed their matched peers in most annual return comparisons other than 1998; they did outperform their peers in the years from 1995 to 1997 cumulative return period. Taken together, these results suggest that 100 Best companies are able to successfully manage relationship with multiple stakeholder groups (Jones, 1995), in this case, both employees and shareholders. At a minimum, these companies are able to create attractive workplaces without hurting the bottom line, and in many cases the 100 Best exhibit superior performance. Their hypothesis that different measure of performance would be affected differently over time is partially supported (Hypothesis 3) (Smithey-Fulmer et al., 2003).

The following managerial implications and implications for further research can be drawn from those findings:

- This study gives evidence that employee satisfaction leads to better company performance and financial results. Therefore managers have to give their employees a workplace environment which leads to high staff satisfaction;
- This research was conducted in the United States. Therefore it has to be verified, if those methods also fit for other countries and cultures.

Operationalization of “Employee Satisfaction” for the Analysis of the Results of the GPTW Contest 2007/2009 in Germany

Based on an employee survey and a culture audit, attending companies of this contest in Germany were ranked from one to 100. In this research, the results from eleven randomly selected companies, which attended the contests in 2007 and 2009 or only in 2009, were analyzed. Unfortunately, the sample was limited to only eleven companies for which the GPTW Institute provided the relevant data set.

After the analysis of one by one of these eleven companies, attending the GPTW Contest, the most significant findings can be pointed out:

- All these 11 companies have a very high employee satisfaction score;
- The six companies which took part twice in this contest (2007 and 2009), and reached a rank among the 100 Best, are outstanding regarding their employee satisfaction scores;

- The average score in 2009 is higher than the average score in 2007, meaning that these 11 outstanding companies could increase their average employee satisfaction score from 2007 to 2009.

Table 1 gives an overview regarding the employee satisfaction scores of the attending 11 companies with the average score.

Table 1

Employee Satisfaction Scores of Attending 11 Companies With Average Score

Company	2007	2009
1	135.48	130.68
2	133.07	152.80
3	-	129.27
4	165.92	159.38
5	130.65	150.48
6	152.35	132.08
7	112.11	152.80
8	-	134.74
9	-	138.81
10	-	122.17
11	-	126.74
Average score	138.26	139.09

Note. Source: GPTW.

Operationalization of “Equity Value” as the Dependent Variable

In the next step, the EBITs and equity values of the companies attending the GPTW Contest have to be computed.

The companies were selected from the GPTW Institute and provided in an anonymous design. All the figures and numbers of the companies are from of the “Elektronischer Bundesanzeiger”. The authors received the data directly from the GPTW Institute in an unattributed form, because confidentiality GPTW eliminated the names of the companies.

The “Elektronischer Bundesanzeiger” is a major official data source, issued by the German Federal Government. It collects mandatory data delivered by all of the German companies which are subject to the German economic and commercial legislation. The data of the “Elektronischer Bundesanzeiger” represent an overall picture of the EBIT as well as the equity value of the population of German companies.

After computing EBIT and equity value for these companies attending the GPTW Contest, the following findings can be pointed out and serve as the base for additional research implications.

Table 2 shows the absolute figures in terms of EBIT and equity value of the companies attending the GPTW Contest.

All of the randomly selected companies show quite strong financial results. Only one company shows significant bank debts. Seven out of eight Companies could increase their EBIT during the regarded period. Six out of eight companies could increase their equity value, as well. Both, average EBIT (26.4%) and equity value (30.45%) grew during the regarded period.

Table 2

Computing Average EBIT and Average Equity Value of the Eight GPTW Companies

Company	EBIT in T€		Equity value in T€	
	2006	2008	2006	2008
1	1,436	2,140	11,091	15,507
2	-	-	-	-
3	-	-	-	-
4	1,024	1,091	7,395	7,080
5	943	1,091	6,173	6,438
6	2,422	2,178	18,615	17,036
7	14,801	15,611	79,512	92,896
8	7,926	14,242	33,079	71,204
9	3,374	3,944	22,848	25,262
10	1,866	2,415	24,199	29,103
11	-	-	-	-
Average	3,072	3,883	18,447	24,048

Note. Source: Elektronischer Bundesanzeiger.

The following empirical findings can be summarized again:

- The secondary data analysis based on the studies from the USA, especially from Smithey-Fulmer et al. (2003), show high evidence that there is a positive relation between employee satisfaction and company value;
- After the analysis of the sample of eleven companies attending the GPTW Contest, it can be stated that all these eleven companies have a very high employee satisfaction score;
- The six companies which took part twice in this contest and reached a rank among the 100 Best are outstanding regarding their employee satisfaction;
- The equity values of the selected companies show quite strong financial results;
- Summing up, it can be ascertained that our research shows high evidence of a remarkable relation between the level of employee satisfaction and the company value.

Additional Primary Statistical Analysis for Testing the Basic Hypotheses

In this part, an additional primary statistical analysis for testing the basic hypotheses was conducted as an exemplary investigation. This research was based on the employee satisfaction scores of the German companies which took place in the GPTW contest 2007 and 2009 and on the EBIT and equity value from 30 randomly selected companies from the “Elektronischer Bundesanzeiger”. It is assumed that those 30 companies large represent the population (the entire number) of the officially listed German companies in terms of company value rate, average employee satisfaction, and average firm size in the area of small and medium sized companies, in accordance with a normal distribution.

Correlation Analysis for the Relationship Between Equity Value and Employee Satisfaction

Different types of correlation analyses were conducted between the delta of the GPTW scores and the delta of equity values. If a rising or declining equity value as the dependent variable is in line with rising or declining GPTW scores as the independent variable, representing employee satisfaction, the basic hypotheses might be substantiated.

A comparison of the results about the years 2007 and 2009 is depicted in Table 3.

Table 3

Equity Value and Δ "Great Place to Work Score"

Company	Δ Equity value	Δ Great value to work score
1	+ 4,416	-4.8
4	-315	-6.54
5	+ 265	+ 19.83
6	-1,579	-20.27
7	+ 13,384	+ 40.69

Note. Source: GPTW and Elektronischer Bundesanzeiger.

Only five out of the 11 companies participated in both years and also show their figures in the "Elektronischer Bundesanzeiger". Therefore, only for these companies, an exemplary correlation analysis could be performed.

The correlation analysis based on Pearson's correlation coefficient shows the following findings:

- There is an acceptable significance level of $p = 0.055$ representing $1 - p = 0.945$ expected probability;
- The analysis shows a strong positive correlation of $r = 0.792$;
- In our case, the coefficient of determination $r^2 = 0.792^2 = 0.627$ means that varying levels of company value are to an impact level of nearly 63% caused by the independent variable employee satisfaction, measured by the GPTW score.

Therefore, the following conclusion can be drawn: There is a positive relationship between the variations of company values in dependence of varying employee satisfaction scores.

The analysis based on Kendall's Tau and Spearman's Rho correlation coefficients show the following findings:

Both Kendall's Tau and Spearman's Rho show a very strong relationship between the equity value as the dependent variable and the GPTW score as the independent variable, representing employee satisfaction (0.8 Kendall's Tau and 0.9 Spearman's Rho).

Interestingly, both significance levels are very high ($p = 0.025$ and $p = 0.019$), which further confirms our basic hypotheses.

However, the authors have to concede that the available data only allowed for a very small sample, which may limit the findings.

Nevertheless, also the first primary analysis is in line with the conjecture that equity value maybe significantly influenced by employee satisfaction.

Testing Statistics for Average EBIT and Average Equity Value Comparing GPTW-Companies and Randomly Selected Companies

In this chapter, the average EBIT and equity values of the 11 analysed companies which attended the GPTW Contest in 2007 or 2009 are computed. As mentioned before, the GPTW Institute tried to find some companies which attended the GPTW Contest in 2007 and 2009 and also show the relevant data in the "Elektronischer Bundesanzeiger". Only eight out of the 11 companies which attended the contest in 2007 and 2009 showed sufficient data for the analyses of EBIT and equity value. The data were given to the authors in an anonymous form because of data security.

From this data set, a comparison can be performed between the eight out of 100 Best companies and other randomly selected companies. By regarding the absolute average EBIT and equity value of the 11 out of 100 Best

companies some differences can be pointed out, set in comparison with 30 randomly selected companies, and at the end, our hypotheses can be tested by a *t*-test and a Mann-Whitney Test.

To test if there is any remarkable difference regarding EBIT and company value between the 100 Best companies and the (randomly selected) normal Companies, an additional test was performed. Thirty companies which were not among the 100 Best or did not participate in the contest were selected randomly from the “Elektronischen Bundesanzeiger”.

Based on a random procedure, the authors chose a sample of 30 companies out of the total population representing the statistical minimum sample size for statistical analysis (Rasch, Verdooren, & Growers, 1999).

The author’s intention is the following:

If the average EBIT and equity value of the eight GPTW companies should be significantly higher than the average EBIT and equity value of the remaining German companies (represented by the randomly selected sample of 30 companies), the authors can postulate that this result may have been caused at least to a certain extent by higher employee satisfaction. This is the fact because the selected eleven GPTW companies are definitely among the best GPTW scores (representing employee satisfaction) within a sample of some hundred companies participating in the GPTW Contest. It can be assumed that generally only those companies decided to participate in the GPTW Contest which would presumably show a higher level of employee satisfaction anyway (Schulte-Deu ßen, 2012).

Comparing Average EBIT and Average Equity Value

Table 4 shows the EBIT’s and equity values of the companies, which attended the GPTW Contest.

Table 4

Computing Average EBIT and Average Equity Value of the “Great Place to Work Companies”

Company	EBIT in T€		Equity value in T€	
	2006	2008	2006	2008
1	1,436	2,140	11,091	15,507
2	-	-	-	-
3	-	-	-	-
4	1,024	1,091	7,395	7,080
5	943	1,091	6,173	6,438
6	2,422	2,178	18,615	17,036
7	14,801	15,611	79,512	92,896
8	7,926	14,242	33,079	71,204
9	3,374	3,944	22,848	25,262
10	1,866	2,415	24,199	29,103
11	-	-	-	-
Average	3,072	3,883	18,447	24,048

Note. Source: GPTW and Elektronischer Bundesanzeiger.

The following findings can be stated:

- Seven of eight companies could increase their EBIT during the regarded period;
- Six out of eight companies could increase their equity value, as well;
- Both average EBIT (26.4%) and equity value (30.45%) grew during the regarded period.

Now the average EBIT and equity value of the 30 randomly selected normal companies can be computed.

Table 5 shows the EBITs and equity values of the 30 randomly selected companies representing the population of German companies.

Table 5

Average EBIT and Equity Value of 30 Randomly Selected Companies in Germany

Company	EBIT in T€		Equity value in T€	
	2006	2008	2006	2008
1	508	466	-16	-1,676
2	407	520	129	-1,398
3	303	126	1,968	661
4	858	338	4,423	15
5	195	61	-2,154	-4,073
6	6,046	3,310	44,628	23,322
7	-272	1,223	-3,618	5,587
8	-396	130	-2,346	-222
9	4,928	6,611	34,992	45,974
10	-15,495	-3,016	-107,686	-16,435
11	511	691	3,305	4,414
12	6,965	9,917	56,074	70,180
13	623	639	5,327	5,438
14	2,415	7,930	25,208	62,146
15	3,452	2,183	24,101	15,189
16	7,902	10,066	42,353	53,810
17	737	410	1,675	-2,170
18	4,138	3,895	25,013	28,292
19	3,803	3,694	20,289	8,784
20	885	1,145	-1,698	-1,017
21	3,678	6,340	27,180	43,299
22	614	450	2,729	2,433
23	2,090	1,068	18,130	12,182
24	624	639	5,334	5,438
25	1,382	1,220	8,260	5,501
26	823	1,058	1,103	5,370
27	4,434	1,851	41,510	27,391
28	791	1,306	3,704	5,901
29	293	347	-617	1,099
30	1,912	2,212	11,622	11,425
	1,505	2,228	9,697	13,895

Note. Source: GPTW and Elektronischer Bundesanzeiger.

The following findings can be stated:

Only slightly more than half (16) of the 30 randomly selected companies could increase their equity value during the regarded period.

There are some companies out of the randomly selected ones, which show negative equity values. Theoretically it would mean that the owner of the company has to give the buyer of the company some money to get rid of it. In practice or in the Mergers & Acquisition business, this would never happen. Therefore, from a realistic point of view, computing the average company value has to be corrected by neglecting negative equity values.

	Ø EBIT in T€			Ø Equity value in T€		
	2006	2008		2006	2008	
GPTW Companies	3,072	3,883	26.4%	18,447	24,048	30.36%
30 randomly Selected	1,505	2,228	48%	13,635	14,795	8.5%
Δ	1,567	1,655		4,812	9,253	

Figure 4. Comparison of GPTW and 30 randomly selected companies with correction of negative equity values.

Comparing the results of the GPTW companies with the results of the 30 randomly selected ones (see Figure 4), it is evident that there is a high difference, not only in the absolute amount of average EBIT and average equity value, but also in the percentage of increase of the equity value.

Testing Statistics for Comparing Different Average EBIT and Equity Values With the Mann-Whitney-Test

From a generated data set which was processed from these absolute figures and arranged with rank numbers, a statistical Mann-Whitney-Test was run with SPSS.

The analysis based on the Mann-Whitney-Test of the EBIT 2006 comparing the eight GPTW companies with the 30 randomly selected companies shows the following results.

For the 2006 results, there is obviously no statistical difference between the eight GPTW companies and the 30 randomly selected companies, shown by the value for the asymptotic significance and the exact significance of 0.616 and 0.686.

From these results alone, it could not be stated that GPTW companies are better than the randomly selected 30 companies representing the population.

The same procedure for 2008 shows an improved result in terms of asymptotic and exact significance values of 0.122 respective 0.221.

But it still means that there cannot be stated any superiority in EBIT 2008 of the eight GPTW companies against the randomly 30 selected companies representing the population.

The analysis based on the Mann-Whitney-Test, equity value in 2006 shows the following results:

The Mann-Whitney-Test procedure for the equity value in 2006 also shows asymptotic significance and exact significance of 0.200 and 0.219. That means the research cannot state a statistical difference, even though the data set indicates an equity value advantage of the eight GPTW companies

The Mann-Whitney Equity Value Test for 2008 becomes statistically much more interesting, because the asymptotic significance and exact significance values improve drastically to 0.066 and 0.074 respectively. This means that on a p-level of about 0.07, it can be stated that there is an obvious superiority in the 2008 equity value of the eight GPTW companies against the representative remaining 30 randomly selected companies.

Testing Statistics for Comparing Different Average EBIT and Equity Values With the T-test

In the first place the Mann-Whitney-Test was conducted as a non-parametric test which does not require specific formats of statistical and empirical distributions. Even though the authors cannot be sure that our sample data for the eight GPTW companies and the sample of the 30 randomly selected companies are subject to a normal distribution, there are some strong hints that this maybe the case:

Firstly, GPTW companies' scores generally follow a normal distribution (Retrieved from www.greatplacetowork.com) and secondly there is no indication that scores and values of the population of German companies do not follow a normal distribution (Retrieved from www.elektronischerbundesanzeiger.de).

Therefore the authors also conducted a *t*-test to find out whether the EBIT and equity value of the GPTW companies of 2006 and 2008 are higher than the EBIT and equity value of the representative sample of the 30 randomly selected companies.

Based on these assumptions the *t*-test shows the following findings:

- The EBIT of 2006 of the GPTW companies and the other 30 randomly selected companies, which represent the population of German companies, does not show a statistical difference, meaning the 0-hypotheses of equal EBIT's cannot be rejected in this case.

The analysis based on the *t*-Test EBIT 2008 shows the following findings:

- Interestingly, for EBIT 2008, there is a significant difference between the eight GPTW companies and the 30 randomly selected companies on a high significance level of $p = 0.027$.
- Therefore it can be stated that the average EBIT 2008 of the eight GPTW companies is significantly higher than the EBIT 2008 of the representative group of the 30 randomly selected companies.

The next step is to conduct the statistical calculation for the equity value of these two groups of companies.

The analysis based on the *t*-Test equity value 2006 shows the following findings:

- The equity value 2006 of the GPTW companies and the other 30 randomly selected companies, which represent the population of German companies, does not show a statistical difference, meaning the 0-hypotheses of equal equity values cannot be rejected.

Finally, the analysis based on the *t*-Test equity value 2008 shows the following findings:

- Our test procedure indicates, based on the *t*-value, that the 0-hypotheses (equal equity values) should be rejected and that there is an obvious difference between the equity value of the eight GPTW companies and the 30 randomly selected companies (representing the population of German companies). However, the level of significance is relatively non-sufficient.

Comparing Average Great Place to Work Scores

Finally, the average score of our 11 attending companies will be compared with the average score of the 100 Best and with the average score of all attending companies, to see if there are also some remarkable findings.

For the year 2007, the average total score of all attending companies was 115.9 and for the 100 Best 132.7.

For the year 2009 the average total score of all attending companies was 107.2 and for the 100 Best 128.9.

The diversification of these two years is caused by two effects. First, the GPTW Institute has differently calibrated their validation for the year 2009, which leads to stricter regulations and therefore to lower scores. Second, there is a tendency that more companies take place in the contest knowing that they don't really have a chance to win the contest (Schulte-Deußen, 2012).

Table 6 shows that the 11 randomly selected companies are obviously above the average 100 Best scores. Interestingly, the average score of all attending companies and the 100 Best companies declined during the regarded period, while the average GPTW score of the 11 randomly selected companies increased during the regarded period. That may lead to the assumption that these 11 companies, which are among the top 50 out of the 100 Best, could increase their employee satisfaction level more than the rest and that they belong to the top rated German companies in terms of employee satisfaction.

Table 6

Comparison of Average Total Scores and Randomly Selected Companies

Average score	2007	2009
11 randomly selected companies	138.26	139.09
Best 100	132.7	128.9
All attending companies	115.9	107.2
Δ Best 100	5.56	10.19
Δ 11 selected to all	22.36	31.89

Intermediate Conclusions Based on the Testing Statistics

Our primary statistical analyses have produced various complementary findings which can be pointed out as follows:

- There is a strong impact of employee satisfaction on the equity value in a positive way (as shown in the correlation analysis). Our sample of the 11 GPTW companies indicates that their overall employee satisfaction is higher than the average employee satisfaction within the population of German companies;
- Even though the conducted Mann-Whitney-Test and *t*-test procedures for EBIT and equity value deliver mixed results, there are some indications that the average EBIT and equity value of the eight (only eight out of the eleven showed sufficient financial data in the “Elektronischen Bundesanzeiger”) regarded GPTW companies may be significantly higher than the EBIT and equity value of the other 30 randomly selected companies (representing the population of German Companies);
- Since it can be presumed that the level of employee satisfaction within the eleven GPTW companies is generally higher than the level of employee satisfaction of the representative other 30 randomly selected companies the authors may basically postulate: “Increasing employee satisfaction tends to have a positive impact on the EBIT and on the equity value”.

Eventually, the authors have to concede that our primary analysis data set is restricted in terms of volume and sample size, which may limit our research statements and would definitely require more research, based on a more voluminous data set and sample size.

Summary of Research Findings and Conclusions

This study was based on an extended theoretical research through a literature review regarding workplace environment, leadership style, management methods, company value, and employee satisfaction. From this fundamental research, this study evaluates the relationship between employee satisfaction and company value by exemplary case study findings from Germany. A secondary data analysis, which also includes a study from the USA, in which the results of GPTW were compared with financial results, fosters previous findings. In an additional primary analysis, some statistical methods were used for an exemplary hypothesis testing procedure (Brenninger, 2013):

- There is theoretical and empirical evidence that employee satisfaction is comprised of a set of main elements like credibility, respect, fairness, pride, and camaraderie;
- There is empirical evidence that the set of employee satisfaction elements outlined above has an impact on company value in a sense that higher employee satisfaction usually increases the company value. This result is based on the secondary empirical analysis of this research;
- There is empirical evidence that indeed companies with assuredly higher degree of employee satisfaction over time are probably superior to average companies in terms of company value over time. This result is based on the findings of the complementary primary data analysis in this research (even though one has to admit the

relatively low sample size for this procedure);

- The main results of this research show that there may be evidence of a cause-effect relation between employee satisfaction and company value;
- Our hypothesis that the “degree of employee satisfaction has an impact on the level of company value” is (preliminary) substantiated.

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Research on Cultural Tourism Issues of Trikala City, Greece

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Cultural tourism in regional cities has grown rapidly in recent years. In order to be successful and sustainable, management of the local authorities is considered as an urgent need to investigate the views of the local community. The purpose of this study was to investigate and interpret the residents' views of Trikala city, in Thessaly, for the benefits of cultural tourism and their attitude to the relevant bodies and local authorities. The empirical analysis is based on the use of cross section data, which were derived from a sample survey to 372 residents of the city. The empirical analysis shows that, generally, the benefits of cultural tourism are recognized, even if the region is at an early stage of development. The findings of logistic regression model show that the view that competent bodies ensure that the promotion of local culture and local heritage is determined by the abundance of events, festivals, and local museums in the city. From the proper utilization of architectural heritage attractions and local heritage, the knowledge of recent achievements concern cultural tourism and the appropriate infrastructure in the city.

Keywords: Trikala city, cultural tourism, financial impacts of cultural tourism

Introduction

The term “culture” was developed in the 18th century, as an expression of western consciousness. It refers to social structure and techniques and features a set of people and societies (Vryzas, 2005). It also refers to all mental events (customs, arts, technical, scientific, and artistic achievements) of society or nation (Karagiannis, 2011). According to MacDonald and Jolliffe (2003), culture involves family patterns, folklore, social customs, museums, monuments, historic structures, artifacts, natural history, and even wilderness areas. Particularly, the World Heritage Convention was held in 1972, recorded with clarity the meaning of “cultural heritage” which includes the works of architecture, building blocks, and spaces (human creations or nature and human creations) (Mitoula, 2011).

Cultural objects are not just creations and expressions, but are everything considered as cultural heritage from historical perspective, which accumulated over the years and offered a sense of heritage (Báez Montenegro, Niklitschek Huaquin, & César Herrero Prieto, 2009). Cultural heritage is a major issue since it can be preserved for future use, while benefited in the present (MacDonald & Jolliffe, 2003). It is the basis for increasing the attractiveness of tourism and cultural offer of local communities (Huibin, Marzuki, & Razak, 2012). Culture, as a tourist attraction, plays an important role for international tourists and an important source of foreign exchange income (Popescu & Corbos, 2010; Huibin et al., 2012). It is assumed that the increased demand for cultural heritage to various destinations has enhanced the tourism competitiveness (Bowitz &

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Ibenholt, 2009).

Nowadays, culture is a factor of great importance for the design of national tourism policy. Culture, as a concept, is associated with the occurrence and development of cities. However, it is a means for tourism promotion in rural and regional areas (Bachleitner & Zins, 1999), as many studies have shown that culture and tourism are resources for socio-economic development in regional communities (MacDonald & Jolliffe, 2003). The increase in tourism attractiveness through cultural heritage and the effective promotion and exploitation of cultural resources can enhance the tourism competitiveness at local level. However, the international literature (research and practice) has proved that the residents' attitude towards cultural initiatives of tourism is essential for the sustainability of its development and final success.

Residents' Perceptions of Tourist Areas

Cultural tourism is defined as the movement of people to cultural attractions away from their normal place of residence with the intention to collect new information and experiences in order to meet their cultural needs (Bachleitner & Zins, 1999, Shamsuddoha, Alamgir, & and Nasir, 2011). It is a kind of special interest tourism, based on search and participation in aesthetic, spiritual, emotional, and psychological experiences. It is approached by a holistic way, but with emphasis on heritage (monuments, archaeological sites, and museums, etc.) (Keitumetse, 2009, Huibin et al, 2012, Hughes & Allen, 2005). Cultural tourism includes tourism in urban cities (mainly historical and large cities) and historical buildings (such as museums, theaters). It can also include tourism in rural and regional areas, showcasing the traditions of indigenous communities, their values and lifestyle (Besculides, Lee, & McCormick, 2002; Shamsuddoha et al, 2011; Huibin et al., 2012). Cultural tourism is also interested in local language, cuisine, technology of the past, clothing and leisure activities (Asplet & Cooper, 2000).

Cultural tourism is one of the fastest growing sectors in tourism industry (Wang, Fu, Cecil, & Hji-Avgoustis, 2008). Its demand in Europe has increased significantly since 1970, due to "new middle class", with high education and income levels (Richards, 1996).

Cultural tourism contributes to local economic regeneration and prosperity, as it creates new job opportunities (Besculides et al., 2002). It also contributes to the increase of national income, by intensive utilization of the available workforce and stimulates investment (food, accommodation, entertainment). When the investment belongs to local investors, the profit remains in the region and helps further investment (Ioan-Frank & Istoc, 2007). Simultaneously, cultural tourism encourages the opening of small and medium enterprises with local traditional products (Bachleitner & Zins, 1999), reinforces the learning of residents, assessment, awareness, pride of community, national identity, exchanging of ideas. Furthermore, it increases the demand for local arts production (Burns & Sancho, 2003; Taylor, 2001; Besculides et al., 2002). Therefore, proper management of cultural tourism has positive socioeconomic impacts and may even contribute to the preservation and protection of cultural resources (Ioan-Frank & Istoc, 2007).

Cultural resources have been used as a means to enhance economic stability, while little research has been conducted on other possible benefits (personal, sociopolitical, economic, and environmental) that tourism can bring to local communities (Besculides, Lee, & McCormick, 2002). Generally, more research is needed for cultural tourism in regional areas, particularly in the fields such as the development of attractions, entrepreneurship encouragement, information of markets, quality service supply, and attractiveness preservation (MacDonald & Jolliffe, 2003).

A more effective promotion of employment and utilization of available cultural resources will lead to an increase of the produced Gross Domestic Product (GDP) and a growth in the number of jobs created by the travelling expenses and tourism industry. In addition it will lead to a significant increase in the number of international and local arrivals of visitors and, international and local tourism revenues as well (Dugulan, Balaure, Popescu, & Veghes, 2010).

Residents' Perceptions of Tourist Areas

Studies have shown that residents' perceptions are affected by their dependence on tourism activities and providing jobs for the residents is very important (Sdrali & Chazapi, 2007; Bachleitner & Zins, 1999; Besculides et al., 2002). The participation and cooperation of local people, local authorities, and policy makers are needed in order to be achievable in the sustainable tourism industry (Sdrali & Chazapi, 2007).

When cultural tourism is used as a tool for development in rural areas, policy makers should consider factors such as cultural identity and authenticity, because they may be affected due to the growing impacts of tourism (Bachleitner & Zins, 1999). Of course, residents worry that by sharing their culture, it can lead to commercialization. In order to provide economic and cultural benefits to the community, the residents should be positive and participate actively in the care and protection of their cultural heritage (Besculides et al., 2002).

The support of tourism development of the host community is affected by the level of their concern, the exploitation of tourism resources by them, the state of the local economy, the costs and expected benefits of tourism development (Gursoy, Jurowski, & Uysa, 2002). It has been found that residents support tourism when economic benefits arise. Generally, the economic profit is more noticeable by residents than social or environmental (Ritchie & Inkari, 2006).

In most communities, the benefits of tourism are gathered in a limited number of people, those who have the capital to invest. Local authorities should distribute the benefits of tourism to the local community, allowing, in this way, a larger proportion of local population to benefit from the tourism development. At the same time, regular monitoring of tourism development should provide information for the needs and views of the residents of local communities (Andriotis & Vaughan, 2003).

National or regional tourism development program should be adapted in order to meet the needs of each community. Otherwise it is unlikely to bring satisfactory results from the viewpoint of residents. Research results show that there is a relationship between the attitude of residents towards tourism and the final result (Andereck & Vogt, 2000). They also show that tourism offers many economic benefits, and the residents' standard of living is increasing due to tourism.

Other studies also show a complex relationship among the level of economic development, the level of tourism development, and the expected perceived socioeconomic and environmental impacts. Very few believe that tourism will provide more jobs, will fortify investment, and predict that prices of goods and services will be increased due to tourism. Almost three quarters of respondents consider that a small group of people, and not the whole community, are shouldering the economic benefits (Johnson, Snepenger, & Sevgin, 1994). As for the economic impacts, residents believe that tourism will attract investment in the region (mainly the locals) (Sevgin, Peristianis, & Warner, 1996).

Overall, residents support tourism development and very few have a negative attitude. Older residents recognize that tourism is a strong and sustainable economic development strategy in order to confront the weakening of other economic sectors. Other studies show that residents are satisfied with the way that tax

money is spent on advertising and updating on tourism issues (Liu & Var, 1986). Finally, residents who live in rural areas may perceive tourism as an important economic development strategy (Lákov á & Vogt, 2011).

Sightseeing of Trikala City

The city of Trikala is located in the center of Greece, in the prefecture of Trikala, in the district of Thessaly and covers an area of 3,367 square kilometers (Nimas, 1987). According to data from the Greek National Statistical Service, from the 2011 census, the permanent population of the city amount to 80,900 residents, while the regional unit of Trikala to 129,700 residents (Retrieved from <http://www.statistics.gr>). The ground of the region is mostly mountainous (71%), but the city is located in the flat part. The climate is continental. In the plain area, the summer is too hot, the winter too cold, it rains frequently and in recent years rarely snows.

Trikala is one of the oldest cities in Greece. It was inhabited since the 3rd century before christ (B.C.). In 1200 anno domini (A.D.), Anna Komnene, Princess of Byzantium, indicated the name of Trikala (Katsoyiannos, 1992; Papazisis, 1996). The city has monuments and intense cultural activity, which in recent years have increased greatly. Thereafter of the text, the main attractions, historical and architectural monuments, museums, infrastructures, and the main expressions of cultural identity of the city are referred. The above are strong elements of the city's cultural identity and strong tourist attraction poles.

Varousi is the oldest traditional settlement of the city with medieval town planning. The oldest buildings were dated from 1800 to 1900. Varousi is a residential area with bunk houses, northern Greek architecture, and narrow helical streets (Kleidonopoulos, 2003) and without shopping or entertainment centers. Underneath the houses, there are Trikki's Asklepieio and the ancient theater (Nimas, 1987). In this region there are late Byzantine churches with wonderful wall paintings, inscriptions, and temples (Ziakas, 1978).

The Byzantine fortress dates back the 6th century A.D. (classical and Hellenistic era) (Ziakas, 1978). It holds the site of the ancient acropolis which was surrounded by walls of classical era. It was completely renovated in the 6th century by Justinian (Papazisis, 1996).

Asclepieion of ancient Trikke: Many ancient authors argue that God of medicine, Aesculapius, came from the ancient Triki, and that there was the oldest and most important Asklepieio (sanatorium) of antiquity (Papastergiou, 1998). The first excavations were carried out by archaeologist P. Kastriotis in 1902 with expenditure of the Municipality of Trikala. They were continued in 1964, since then they had been stopped as a result not to have exploited this important archaeological monument (Nimas, 1987).

The Koursoum Mosque (Mosque of Osman Shah), a characteristic monument of oriental architecture and one of the last remaining in Greece, is located in the city center. It is the only survived of overall seven that the city had. The importance of this mosque, except from its seniority and the fact that it was built by a great architect, Sinan (who had built 81 mosques), results from its majestic dome (Nimas, 1987). It was built in the 16th century after the Turkish order of Prince Osman Siach (son of Sultan Suleiman) in the years of the Great Empire Suleiman (1520-1566).

The Mill of Matsopoulos is located in southwest of the city. In 1884, the first pasta factory was settled there and a little later one of the first flour milling of Greece. It is the first mill that was built in Greece, the largest in the Balkans and one of the most important traditional monuments of Industrial Heritage in Greece. This complex building, along with the surrounding area of 90 acres, is more than 3,500 square meters. Mill consists of three floors, its internal installations are all wooden and its external lining is made of stone and is

surrounded by greenery. Today, the mill serves as a cultural center.

River Lithaios and bridges: The River Lithaios secures the water supply of the city (Moutsopoulou, 1987), through the town of Trikala diagonally from northwest to southeast. According to the ancient geographer Stravonas, the god of medicine, Asclepius, was born on its banks. Over the past, the two banks of Lithaios were connected with three stone bridges and one wooden footbridge, while now with 11 large and solid bridges half of which are for pedestrians. The central bridge was constructed in 1886 by French engineers (length 31 meters, height 6.30 meters) and is metallic (Nimas, 1987). In the riverbed, there are ornamentals and vegetation.

The Fieldwork

A fieldwork took place in order to investigate the factors that influence residents' views about the benefits of cultural tourism on residents' satisfaction with the actions of competent bodies on cultural tourism and cultural heritage promotion. There were distributed 400 questionnaires to residents of Trikala city in the period between June and July 2012. Of these, 372 are valid and are used in the statistical analysis. The questionnaire was completed anonymously, the sample was chosen by random sampling method. An attempt was made to cover the whole range of ages (18 years old and over) and all educational levels. Data processing and statistical analysis was performed with the use of SPSS18.

Descriptive Statistics

The statistical analysis shows that the participation of women (58%) was higher than that of men (42%). Greater was the participation of young people aged 18-27 years old (28%), of which 26.3% were 35-45 years old, 23.7% were 28-34 years old, and 22% were from 46-68 years. With regard to the educational level, 50.3% were of higher education and the majority of respondents were employed (80.1%), while the majority of respondents (63.2%) had income to 20,000 €.

It is characteristic that 47% of respondents consider that the historical buildings of the city are kept in good condition, 35% agree that cultural events are advertised to attract visitors, and only 32% agree that there are plenty of events, festivals, and local museums in the city. As regards the utilization of the city heritage, it is believed by most residents that there has not been a proper utilization of the local heritage and the attractions of architectural city heritage for the promotion of cultural tourism, at a rate of 75% and 80% respectively. It is remarkable that 58% do not know the recent achievements in the cultural tourism, while 64% are not aware of the cultural program of the city.

Generally, it is argued that cultural tourism contributes to the preservation of cultural heritage. Most residents (61%) believe that cultural tourism helps to the revival of traditions, customs, local arts, and crafts, and 59% agree that it maintains the traditional culture and folklore. Sixty-four percent believes that cultural tourism sensitizes the residents of the city for cultural heritage, while 68% do not believe it affects adversely the lifestyle and social relations. As for the economy, it is argued that cultural tourism develops local economy and provides more jobs in 73% and 67% respectively. Only 28% believe that the cost of living increases. Subsequently, 69.6% agree that the benefits of cultural tourism will outweigh the consequences. Finally, only 21.7% of respondents support that competent bodies ensure the promotion of local culture and local heritage.

Multiple Linear Regressions

In the analysis of multiple linear regressions, the dependent variable is the measurement of the opinion about the benefits of cultural tourism in relation to its impacts. The independent variables are demographic data,

which are measured with appropriate dummy variables, and also the opinions on relevant issues. The regression model to be estimated is the following:

$$\text{BENTOUR}_i = b_0 + b_1\text{Gender}_i + b_2\text{Income}_i + b_3\text{Educ}_i + b_4\text{Job}_i + b_5\text{Herman}_i + b_6\text{Retrad}_i + b_7\text{Folkman}_i + b_8\text{Resens}_i + b_9\text{Negef}_i + b_{10}\text{Holdyou}_i + b_{11}\text{Ecodev}_i + b_{12}\text{Inliv}_i + b_{13}\text{Infimp}_i + b_{14}\text{Cutinv}_i + b_{15}\text{Valexp}_i + \varepsilon \quad (1)$$

Table 1

Variable List and Definitions

Variables	Description
Dependent variable	
BENTOUR	quantitative variable, which measures the respondent's degree of agreement to the benefits of cultural tourism. 1 = disagree completely, 2 = disagree, 3 = neutral, 4 = agree, and 5 = fully agree
Independ. variables	
Gender	Dummy Variable (DV) = 1 if individual is man, 0 if individual is woman
Income	DV = 1 if individual has income 0-20,000 €, 0 if not
Educ	DV = 1 if individual has completed higher education, 0 if not
Job	DV = 1 if individual works, 0 if not
Herman	quantitative variable which expresses the respondent's degree of agreement with the view that cultural tourism contributes to cultural heritage maintenance. 1 = completely disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 = fully agree, DV= 1 if cultural tourism
Retrad	quantitative variable which expresses the respondent's degree of agreement with the view that cultural tourism helps to the revival of traditions, customs and local arts and crafts. 1 = completely disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 = fully agree
Folkman	quantitative variable which expresses the respondent's degree of agreement with the view that cultural tourism maintains the traditional culture and folklore. 1 = completely disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 = fully agree
Resens	quantitative variable which expresses the respondent's degree of agreement with the view that cultural tourism contributes to the residents' sensitization for cultural heritage. 1 = completely disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 = fully agree
Negef	quantitative variable which expresses the respondent's degree of agreement with the view that cultural tourism negatively affects the lifestyle and social relations. 1 = completely disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 = fully agree
Holdyo	quantitative variable which expresses the respondent's degree of agreement with the view that cultural tourism can keep the young at home. 1 = completely disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 = fully agree
Ecodev	quantitative variable which expresses the respondent's degree of agreement with the view that cultural tourism contributes to the development of regional economy and market. 1 = completely disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 = fully agree
Inliv	quantitative variable which expresses the respondent's degree of agreement with the view that cultural tourism contributes to the increase of cost of living. 1 = completely disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 = fully agree
Infimp	quantitative variable which expresses the respondent's degree of agreement with the view that cultural tourism improves the infrastructure in the city (streets, sidewalks, bridges, etc.). 1 = completely disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 = fully agree
Cutinv	quantitative variable which expresses the respondent's degree of agreement with the view that the money spent on the development of cultural tourism is a good investment. 1 = completely disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 = fully agree
Valexp	quantitative variable which expresses the respondent's degree of agreement with the view that meeting with visitors from around the world and sharing culture will be valuable experience. 1 = completely disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 = fully agree

The second column of Table 1 describes each variable of the equation (1). The second column of Table 2 presents the results of equation (1) for all of explanatory variables. The non-significant variables were removed from the original model and the results of the final model are presented in the third column of Table 2.

According to the adjusted coefficient of determination, the model explains the 51.7% of the variability of

the dependent variable. That is, the variability of opinion about whether the benefits of cultural tourism will be more than impacts depends on 51.7% of the independent variables.

Table 2

Multiple Linear Regression Estimation for the Residents' Degree of Agreement That the Benefits of Cultural Tourism Will Outweigh the Impacts

Independent variables	First Model		Final Model	
	<i>b</i>	<i>t</i> -statistic	<i>b</i>	<i>t</i> -statistic
constant	1.213***	4.429	1.155***	4.411
gender	-0.064	-0.922		
income	0.191***	2.664	0.186***	2.664
educ	0.002	0.030		
job	-0.177**	-2.063	-0.169**	-1.990
herman	0.022	0.432		
retrad	-0.041	-0.824		
folkman	0.094*	1.736	0.073*	1.708
resens	-0.078*	-1.750	-0.075*	-1.761
negef	-0.153***	-5.043	-0.155***	-5.175
holyou	-0.089**	-2.531	-0.092***	-2.644
ecodev	0.133***	2.920	0.134***	3.014
inliv	-0.058*	-1.820	-0.054*	-1.727
infimp	0.129***	3.163	0.131***	3.247
cutinv	0.308***	6.915	0.308***	6.975
valexp	0.306***	6.128	0.312***	6.301
<i>F</i> statistic	27.130***		37.100***	
<i>R</i> ²	0.533		0.531	
<i>R</i> ² (adj)	0.514		0.517	

Note. ***, **, *, represent the level of significant at 1%, 5%, and 10%, respectively.

The analysis shows that gender and education do not affect the dependent variable. Therefore, both men and women express the same opinion on average for the benefits of cultural tourism. Similarly, people of all education levels express the same opinion on average. The degree of agreement with the views that cultural tourism contributes to maintaining of cultural heritage and that helps in the revival of traditions, customs, local arts, and crafts, does not interpret the degree of agreement with the view that the benefits of cultural tourism will outweigh effects.

According to the final model, the estimated equation of the factors that determine the level of agreement for the cultural tourism benefits is:

$$\text{BENTOUR}_i = 1.155 + 0.186\text{Income} - 0.169\text{Job} + 0.073\text{Folkman} - 0.075\text{Resens} - 0.155\text{Negef} - 0.092\text{Holdyou} + 0.134\text{Ecodev} - 0.054\text{Inliv} + 0.131\text{Infimp} + 0.308\text{Cutinv} + 0.312\text{Valexp}$$

Income and employment are statistically significant determinants of the degree of agreement about the benefits of cultural tourism at 1% and 5% respectively. Individuals with income up to 20,000 € express more positive opinion, by 2.664 points, for the benefits of cultural tourism in relation to persons of other income category. The negative sign in employment shows that people who work have less positive opinion than the

jobless, by 1.990 points on average.

Residents who agree with the view that cultural tourism maintains traditional folklore/culture, develops local economy, and improves the infrastructure in the city, have a higher degree of agreement with the view that the benefits of cultural tourism will outweigh impacts, at statistically significant level of 10%, 1%, and 1% respectively.

Those who believe that cultural tourism creates awareness of residents for cultural heritage, that it adversely affects the lifestyle and social relations, and that it can hold their young in their place, present a lower level of agreement with the view that benefits of cultural tourism will outweigh the impacts, at 10%, 1%, and 1% level respectively. Also, the relationship between the increasing cost of living due to cultural tourism and cultural tourism benefits is negative at statistical significance level of 10%.

In relation to the residents' opinion that money spent on cultural tourism development is a good investment shows it interprets statistically significantly the degree of agreement about the benefits of cultural tourism at 1% level and seems to influence it positively. Finally, the more residents agree that meeting visitors from around the world and sharing culture will be a valuable experience. The more they agree that cultural tourism can bring benefits than impacts at 1% level.

Binary Logistic Regression

The estimation of the logistic regression model examines the factors that influence residents' views on whether the competent bodies ensure the promotion of local culture and local heritage. On these factors are not included demographic variables but factors about the prevailing situation in the city. Thus, the following logistic regression equation was estimated:

$$\text{COMPET}_i = b_0 + b_1\text{Hisbu}_i + b_2\text{Public}_i + b_3\text{Numev}_i + b_4\text{Utsig}_i + b_5\text{Utcu}_i + b_6\text{Recach}_i + b_7\text{Progr}_i + b_8\text{Infra}_i + \varepsilon \quad (2)$$

The second column of Table 3 describes each variable of the equation (2). The second column of Table 4 presents the results of equation (2) for all of explanatory variables. The non-significant variables were removed from the original model and the results of the final model are presented in the third column of Table 4.

Table 3

Variable List and Definitions

Variables	Description
Dependent variable	
COMPET	Dummy variable, which measures the respondent's degree of agreement to the local culture and local heritage promotion by the competent bodies. 1 = agree, 0 = disagree
Independent variable	
Hisbu	DV = 1 if individual agree that the city's historic buildings are kept in good condition
Public	DV = 1 if individual agree that cultural events are advertised in order to attract tourists
Numev	DV = 1 if individual agree that the city has plenty of events, festivals, local museums
Utsig	DV = 1 if individual agree that has been appropriate utilization of architectural heritage attractions in the city (e.g., restoration) for the promotion of cultural tourism
Utcu	DV = 1 if individual agree that it has been appropriate utilization of local heritage (events, festivals, traditions, gastronomy, etc.) in the city for the promotion of cultural tourism
Recach	DV = 1 if individual knows the recent achievements in the cultural tourism
Progr	DV = 1 if individual knows the cultural program of the city
Infra	DV = 1 if individual agree that there is adequate infrastructure in order to accommodate a large part of tourists

Table 4

Binary Logistic Regression Estimation for the Residents' Degree of Agreement to the Local Culture and Local Heritage Promotion by the Competent Bodies

Independent variables	First model		Final model	
	<i>b</i>	Wald	<i>b</i>	Wald
Constant	-4.350***	66.055	-4.188***	70.509
Hisbu	0.262	0.590		
Public	0.416	1.565		
Numev	0.721**	4.730	0.842***	7.063
Utsig	1.744***	25.252	1.758***	26.483
Utcu	1.211***	12.337	1.310***	15.399
Recach	0.679**	3.909	0.690**	4.692
Progr	-0.093	0.067		
Infra	1.582***	12.503	1.607***	13.069
-2 Log likelihood	260.736		262.905	
Nagelkerke <i>R</i> Square	0.452		0.445	

Note. ***, **, *, represent the level of significant at 1%, 5%, and 10%, respectively.

According to the adjusted coefficient of determination, the model explains the 45.2% of the variability of the dependent variable. Furthermore, the independent variables that are statistically significant are examined in the final model and explain 44.5% of the dependent variable.

The above analysis shows that the maintenance of historic buildings, the advertising of cultural events, and the cultural program knowledge do not affect the dependent variable. The degree of agreement to the views that the city's historic buildings are kept in good condition and cultural events are advertised in order to attract tourists and the knowledge of the cultural program, does not interpret the degree of agreement to the view that competent bodies ensure the promotion of local culture and local heritage.

According to the final model, the estimated equation of the factors that determine the level of agreement for the promotion of local culture and local heritage by the competent bodies is the following:

$$\text{COMPET}_i = -4.188 + 0.842\text{Numev} + 1.758\text{Utsig} + 1.310\text{Utcu} + 0.690\text{Recach} + 1.607\text{Infra}$$

The first statistically significant evidence that is extracted from Table 4 is the positive sign of the estimated coefficient about the abundance of events, festivals, local museums. At statistical significance level 1%, as someone considers that the city is characteristic for its abundance of events, festivals, and local museums, the probability is increased to believe that the competent operators have taken care of highlighting local culture and local heritage.

When someone believes that it has been appropriate utilization of architectural heritage attractions or generally of local heritage in the city for cultural tourism promotion, it increases the probability of believing that the competent bodies have ensured the local culture and heritage promotion, at significance level of 1% and 1% respectively.

The more informed is someone of recent achievements concerning cultural tourism, increasing the probability to believe that the competent operators have ensured the local culture and local heritage promotion at level 1%. Finally, when someone considers that there is adequate infrastructure in order to accommodate a large portion of tourists, the effect on the dependent variable continues to be positive at level 1%.

Conclusions

It is generally argued that cultural tourism contributes positively to the region, offering benefits and investments in local community. When there is proper planning and management, it can have also positive socio-economic impact and contributes to the protection of cultural resources.

Income and employment are statistically significant determinants of the degree of agreement about the benefits of cultural tourism. Greater degree of agreement with the view that benefits of cultural tourism will outweigh impacts is presented to the residents who agree with the view that cultural tourism retains its traditional folklore/culture, develops local economy, and improves infrastructure in the city. Those who believe that cultural tourism contributes to awareness of residents for cultural heritage, that it adversely affects lifestyle and social relations, and that it can hold the young in their place, present a lower level of agreement with the view that benefits of cultural tourism will outweigh the consequences. The same seems to be with the increasing living cost and cultural tourism benefits. As residents agree that money spent on cultural tourism development is a good investment and that the meeting with visitors from around the world will be a valuable experience, they agree more that cultural tourism can bring benefits than impacts.

The most significant were the findings of logistic regression for the investigation of factors that affect the degree of residents' agreement with the view that "competent bodies ensure the promotion of local culture and local heritage". The empirical results indicate that the probability of someone to agree with the above views is increased when they consider that the city is characteristic for the abundance of events, festivals, and local museums. This probability also increases when someone considers that it has been appropriate utilization of architectural heritage attractions and generally local heritage for the promotion of cultural tourism. The more informed is someone of recent achievements concerning cultural tourism, increasing the probability to believe that the competent operators have ensured the local culture and local heritage promotion. When someone considers that there is adequate infrastructure in the city for tourists, the effect on the dependent variable continues to be positive.

Sustainable tourism except for natural environment includes social and cultural environment of the destinations. Therefore, it should, in short and long term, meet the needs of the local population. The policies for tourism management should aim at promoting sustainable development, being interdependent, and promoting social equity. The provision operators of tourist services should implement and monitor an integrated management approach for cultural tourism quality, specifying standards, quality, and integration of concerns of tourists and residents. When cultural tourism is used as a development tool, policy makers should consider the factors that may be affected due to the growing impact of tourism and to create a strategy in order to minimize them.

The continuous improvement of public services and infrastructure, the additional financial support for cultural tourism development, the improving of area image, and the support for employment and business opportunities can improve levels of satisfaction, bring more tourists to the city, and even enhance the quality of residents' life. In contrast, the absence of sustainable economic alternatives reduces satisfaction and continued support for tourism. Tourism development programs that are not adapted to meet the needs of each community are unlikely to produce satisfactory results for the residents. Local authorities should distribute benefits within the local community, so that a greater proportion of local population can benefit from the expansion of tourism.

In conclusion, in an integrated management approach of cultural heritage and cultural tourism, competent

bodies should take into account the perceptions of local community about the sustainability of this kind of project. However, the analysis of economic, social, and environmental variables should be studied before any tourism development plan, and then over time the economic, social, and environmental impacts of tourism development should be monitored and evaluated.

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Managing a University From Its Revenue

Perspective—Empirical Illustration of

Poznan University of Economics

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The concept of higher education development allowing universities to make full contribution to the Lisbon Strategy, assumes an increased competitiveness of European universities. Such increase should result in making them more attractive to students, improving teaching quality, and finally ensuring higher levels of research and innovation. Universities will not become innovative and responsive to change unless they are given real autonomy and accountability. This requires new internal governance systems based on strategic priorities and on professional management of human resources, investment, and administrative procedures. The purpose of this paper is to evaluate the relationship between education and scientific activities of universities. The said interrelation was analyzed both from the perspective of the university's main sources of revenues (i.e., subsidies), as well as from the perspective of financial results generated by the university's internal units. The paper's objective determines the choice of research methods, based on critical, comparative, and descriptive analysis. The paper contains elements of deductive reasoning. The authors' analysis showed a strongly negative correlation of research performance to educational performance. The structure of algorithms used to calculate the subsidy paid to a given university may suggest a negative correlation between its revenues from educational activity and those from research. However, by analyzing the variability of revenues vis-a-vis the main components of algorithms used to calculate the subsidy one can conclude that revenues from research and from education are not interrelated. This lack of any relationship could be explained by considerable inertia of the subsidies. Changes in key algorithm components do not have a proportional effect on the amount of available subsidy.

Keywords: university, revenues, educational activity, research activity, correlation

Introduction

Growing demand for improved operational performance of universities has inspired new practices in accounting, as well as new university performance appraisal systems (Townley, 1997; Lapsley & Miller, 2004). In many countries, university financing has been tied to their educational and research results. As regards research, those results are typically measured by the number of publications whose prestige and scientific importance (or simply quality) is determined on the basis of international rankings of scientific journals.

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Education in its turn is assessed on the basis of the number of students and the quality of lectures, with the evaluation criteria being the lecturer's experience in business practice and the opinion of students.

Over the last six years, Poland has seen substantial changes in university financing. Division into research centers on the one hand and universities' offering more practical education on the other has been postulated. Other proposals included ensuring equal rights of private and public universities in order to promote quality-based competition in the education market (which has been contested by public universities and thus partially abandoned).

Universities have been encouraged to and rewarded for introducing innovative curricula; interfaces between universities and businesses have been established; higher education tailored to the needs of the labor market has been promoted.

Simultaneously however the negative effect of Poland's demographic structure on university performance has been very clearly visible. Shrinking student numbers heavily affect universities' financial condition.

A 2010 report by Ernst and Young commissioned by the Ministry of Science and Higher Education (Ministerstwo Nauki i Szkolnictwa Wyższego, MNiSW) was the first one to warn against the "demographic tsunami" (EY, 2010).

The objectives expected from Polish universities have changed over the years, but recently they seem to concentrate on two areas: scientific development and training of professionals wanted on the labor market. The pursuance of those objectives is inseparably connected with university financing. Of equal importance here are the source, distribution and amount of funding as a whole, and the division of those funds between universities' internal units (usually faculties).

Polish universities are expected to change their operational principles and put more emphasis on research activities. After 20 years of educational boom and catching up with Western Europe¹ time has come to take steps aimed at raising the prestige of Polish universities compared to their foreign counterparts. This can be achieved only by improving the quality and enhancing the efficiency of scientific research. The structure of research financing is being changed, with a growing importance of specific project grants and gradual marginalization of general-purpose subsidies. In fact, this is a fundamental change, because as of now 80% of universities' revenues come from educational activity.

In 2013, the state budget will contribute Poland 18,000 million to higher education and scientific research (approximately 0.54% of the budget), two thirds of which will be spent on the former and one thirds on the latter.

On top of that, higher education and research are paid for by individuals and other private contributors, and the total amount of public and private expenses on these two objectives is just under 2% of the Gross Domestic Product (GDP)², which is in keeping with European standards (EY, 2010). It should be remembered however that over the last six years, GDP per capita in Poland has varied from 55% to 66% of the European Union (EU) average (Eurostat, 2013). Public funds take the form of two cash flows:

(1) Education subsidy used to finance full-time courses;

¹ In mid 1990s the percentage of Poles with a degree was 6.6%, as compared to over 15% today; 39.1% of people aged 30-34 hold a degree (European average: 35.8%). The net enrolment ratio in higher education in Poland grew from 8.8% in 1990 to 40.6% in 2011 (Retrieved November 24, 2013, from http://www.nauka.gov.pl/g2/oryginal/2013_07/0695136d37bd577c8ab03acc5c59a1f6.pdf).

² In Poland, 29.6% of the total expenses on higher education comes from private sources and the balance comes from public funds. The notion of private funds includes both tuition fees and funds obtained from businesses (EY, 2010).

(2) Statutory goals subsidy, commonly referred to as the research subsidy, as well as other funds (such as grants) earmarked for scientific research.

The purpose of this paper is to evaluate the relationship between education subsidies and scientific research subsidies paid to Polish universities. The said relationship is analyzed from the perspective of algorithms used by the MNiSW to determine the amount of funds to be allocated for each university (or in other words: from the perspective of the university's income).

The paper's objective determines the choice of research methods, based on critical, comparative, and descriptive analysis. The paper contains elements of deductive reasoning.

Background

Undoubtedly, revenues constitute a measure of the university's achievements. Higher education institutions generate revenues as part of their research and education activity.

Remarkably, according to official statistics the revenues per student in public universities in Poland are five times lower than in other European countries (revenues per staff member are two times lower) (EY, 2010).

The largest share in the university revenue structure comes from educational activity. From 2009 to 2011 the said share amounted to approximately 80% in public universities and approximately 90% in private ones.

Table 1 shows the structure of university revenues in Poland, separately for public and private universities.

Table 1

Relative Shares in the Structure of Universities' Operating Revenues (2009 to 2011)

	Operating revenues	Education revenues	Research revenues	Revenues from commercial activity (organized separately)	Revenues from sales of merchandise and materials	Other operating revenues
2009						
Public universities	100	80.4	14.8	0.6	0.1	3.6
Private universities	100	93.1	1.8	0.3	0.3	4.4
2010						
Public universities	100	78.5	15.9	0.6	0.1	4.4
Private universities	100	90.2	2.8	0.3	0.3	6.3
2011						
Public universities	100	77.0	16.2	0.7	0.1	5.4
Private universities	100	86.4	3.2	0.4	0.3	9.6

Note. Source: by the authors based on data from GUS (Central Statistical Office of Poland).

As regards revenues from educational activity, differences in the sources of those revenues are clearly visible. At public universities, over 70% of those funds come from public sources (subsidies); whereas at private universities, as much as 85% of educational activity revenues come from tuition fees (see Table 2).

Table 2

Relative Shares in the Structure of Universities' Education Revenues (2009 to 2011)

Type of university	Budget subsidies			Tuition fees			Other		
	2009	2010	2011	2009	2010	2011	2009	2010	2011
Public universities	74.3	72.5	71.7	17.5	17.4	16.8	8.2	10.6	11.5
Private universities	6.7	6.8	6.1	88.5	86.6	85.2	4.8	6.6	8.7

Note. Source: by the authors based on data from GUS (Central Statistical Office of Poland).

Another significant type of public universities' revenues is fund obtained to finance scientific research activities. Table 3 shows that unlike in the case of education revenues, the relative share of scientific research revenues in the overall revenue structure grew slightly from 2009 to 2011.

Table 3

Relative Shares in the Structure of Universities' Research Revenues (2009 to 2011)

Type of university	Budget subsidies			Sale of R&D services and projects		
	2009	2010	2011	2009	2010	2011
Public universities	87.0	88.5	88.1	13.0	11.5	11.9
Private universities	97.5	96.6	88.8	2.5	3.4	11.2

Note. Source: by the authors based on data from GUS (Central Statistical Office of Poland).

From 2009 to 2011, most revenues from the sale of research projects and services (measured as a share in the total amount of universities' research revenues) were generated by medical universities (approximately 22%), technical colleges (approximately 14%) and agricultural colleges (approximately 13%). As regards universities of economics, the said share in the period in question was as low as 4%.

Recent changes in university financing in Poland led to the establishment of three financing institutions, namely: National Science Centre (Narodowe Centrum Nauki, NCN), National Centre for Research and Development (Narodowe Centrum Badań i Rozwoju, NCBiR), and MNiSW.

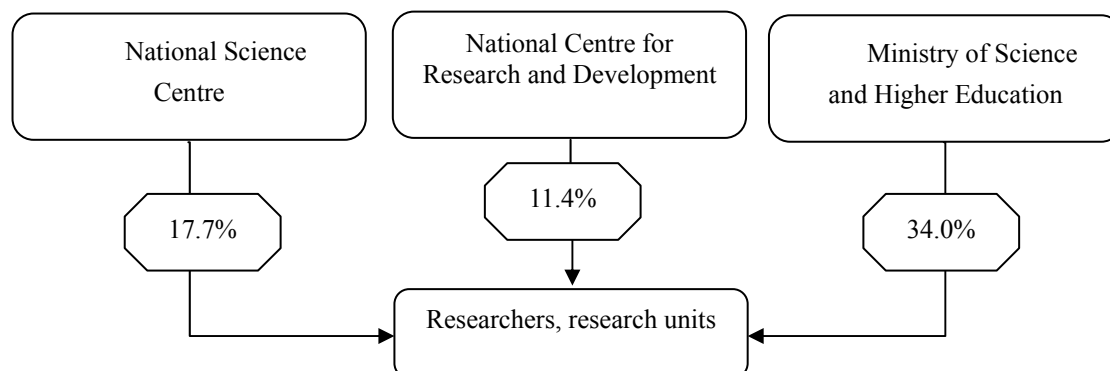


Figure 1. State research financing institutions. Source: MNiSW, 2011.

In 2012 the structure of research revenues of Polish universities coming from the said three sources of financing was as follow: 34% from the MNiSW, 17.7% from the NCN, and 11.4% from the NCBiR. The balance came from other sources, such as foreign funds. It is evident that the subsidy from the MNiSW continues to contribute the largest share.

Educational Activity Financing

Like most other European countries, Poland operates a set of calculation formulae allowing the authorities to calculate the amount of financing for universities' education and other statutory activities. The said formulae do not take into account the university's location (unlike in the UK, for instance), or the cost of property maintenance (unlike in Finland), but they do take into account the number of research staff, costs incurred in the previous year, the number of students and the number of scientific degrees awarded by the university.

Higher education financing is based on the Higher Education Law Act of 27 July 2005³. Subsidies are allocated for financing the tuition of students in full-time studies (including doctoral studies), research staff, and the university's maintenance. The MNiSW distributes subsidies pursuant to the regulation of the MNiSW on the division of state budget subsidies for public and private universities⁴.

The Polish algorithm used for financing educational activity of public universities is based on seven variables (including: number of students (include doctoral students), so-called sustainable development factor based on the number of students and researchers, staff factor; number of entitlements to award *doktor habilitowany* degrees, number of research projects, number of students participating in international exchange, and finally a constant value carried over from the previous year). With the algorithm based on the above criteria only, teaching quality is not taken into account; instead, most attention is paid to the university's size, which favors larger institutions.

The main portion of the basic subsidy is computed separately for two types of universities, i.e. academic and vocational. The basic subsidy function is based on several supporting variables (components). The basic subsidy is calculated based on a formula incorporating a number of parameters characterizing the higher education institution in question⁵:

- S_i : students' and doctorate students' component of institution i ;
- K_i : staff component of institution i ;
- B_i : research component of institution i ;
- U_i : entitlements component of institution i ;
- W_i : exchange component of institution i .

Particular attention needs to be paid to two variables, namely, the students' and doctorate students' component and the staff component. In the analyzed period, both of these components had relative weights of 35% each. In other words, an increase in the number of students or in the number of researchers and lecturers resulted in an increase in the basic subsidy.

Research Activity Financing

Research is the other key area of activity in the sector of higher education and science. The higher education legislation currently in effect in Poland provides for a separate procedure of research financing. An alternative manner of appraising research performance involves the use of another algorithm for budgetary funds allocation.

In the research area, the key source of university financing is the statutory activities subsidy (commonly referred to as the research subsidy). Research is financed pursuant to the Research Financing Act of 30 April 2010⁶. The principles of subsidy distribution are in line with the regulation of the MNiSW on the criteria and procedures of allocating and accounting for funds earmarked for statutory activities⁷.

Financing of research includes financing of activities that contributes to the pursuance of the research,

³ Journal of Laws No. 164, item 1365, as amended.

⁴ Regulation of the Minister of Science and Higher Education on the division of state budget subsidies for public and private universities, dated 8 February 2012 (Journal of Laws of 2012, No. 37, item 202).

⁵ In 2013 another parameter was introduced (academic staff's availability for students).

⁶ Journal of Laws of 2010, No. 96, item 615.

⁷ Regulation of the Minister of Science and Higher Education on the criteria and procedures of allocating and accounting for funds earmarked for statutory activities, dated 8 February 2012 (Journal of Laws No. 218, item 1483, as amended).

research/technical, and innovations policy of the state. In particular, this refers to scientific research and development projects, as well as other projects of key importance for the state's civilizational progress as well as its economic and cultural development.

The division of funds from the Ministry is based on universities' research performance appraised by means of performance indicators equivalent to the ratio of points scored by the university to the number of its research and development staff.

$$E_i = \frac{p_i}{z_{iBR}} \quad (1)$$

where:

E_i : research performance of institution i ;

p_i : number of points scored by institution i as part of its research activity;

z_{iBR} : number of research and/or development staff at institution i .

The next stage is the relative performance calculation, equal to the ratio of the university's individual performance to maximum performance achieved by the most efficient institution in a homogenous group (separately for research activity and for practical application of research and development projects).

$$Ew_i = \frac{E_i}{E_{max}} \quad (2)$$

where:

Ew_i : relative performance of institution i ;

E_i : performance of institution i ;

E_{max} : maximum performance in a homogenous group of research entities.

The final value of the performance indicator is arrived at by aggregating the relative performance products calculated separately for research activity (E_I) and for practical application of research and development projects (E_{II}). Each of the relative performances is weighted separately.

$$E_{k_i} = Ew_{I_i} * W_I + Ew_{II_i} * W_{II} \quad (3)$$

where:

E_{k_i} : final performance of institution i ;

Ew_{I_i} : relative research activity performance of institution i ;

W_I : research activity performance weight;

Ew_{II_i} : relative performance of institution i in the area of practical application of research and development projects;

W_{II} : weight of performance in practical application of research and development projects.

One of the parameters that affect the amount of available funding is the number of research and development staff employed by institution i . An increase in staff numbers may lead to poorer research performance, if the performance of the newly employed persons is below the overall performance previously achieved by the entity.

A question needs to be asked whether the staff component used in the educational activity subsidy calculation formula is negatively correlated with the institution's research performance. This may be the case if the growth in the number of staff exceeds, e.g., the growth in the number of research points scored.

The following part of this paper sets out to prove that the algorithms used to calculate educational activity on one hand and research activity on the other are mutually competitive (exclusive). The said hypothesis will be

verified by analyzing the example of the Poznań University of Economics (PUE), on the basis of data for 2009 to 2011. The choice of the period follows from the need to ensure data comparability, as in 2012 the algorithm used to calculate the subsidy for educational activity of Polish universities was modified.

Research and Education Performance as a Measure of Mutual Dependence of Universities' Operational Areas

Operational performance is one of the key attributes of organizations managing a given set of resources. Drucker (1976) defines performance as an attribute that determines the functioning and development of the organization in question. However, one's pursuance of pro-efficiency operation depends on a number of conditions (Czechowski, 1997):

- system and institutional conditions (distant environment);
- market conditions (near environment);
- internal conditions.

In the case of the higher education and science sector, the environment is of particular attention for the performance definition methodology. The sector's underlying legislation contains a set of expectations that largely determine the mode of managing higher education and science institutions. Thus, is the notion of performance known from for-profit organizations operating in highly competitive markets equally applicable to public finance sector entities?

In the literature one can find a number of publications on the performance of higher education institutions: Sinuany-Stern, Mehrez, and Barboy (1994) were the first to evaluate the performance of various departments at a single university⁸. Similar studies were subsequently held by King (1997), Arcelus and Coleman (1997), Sarrico and Dyson (2000), Tauer, Fried, and Fry (2007), Kao and Hung (2008); and finally by Napiecek (2013).

In terms of universities' functional performance, it is necessary to ensure adequate division of resources among the three main operational areas. Richardson, Parker, and Udell (1992) define them as education, research, and administration. Last years' research into mutual relationships among the three areas has concentrated on their complementarity and exclusivity⁹ (Murphy, 1994). The exclusivity of education and research is understandable, taking into account the limited amount of working time of academics. Fox (1992) is of the opinion that those two areas are competitive, rather than complementary. In most cases, time devoted to teaching does not contribute to research achievements. The only exception could be tuition in the form of seminars. An alternative view on the interrelation between those areas is presented by Bauerlein (2009) who claims that research activity at the university improves its financial condition and prestige, causes greater interest in doctoral studies and may thus reduce teaching workloads.

In their turn, Hattie and Marsh (1996) point to the multifaceted nature of the relationships between education and research. Their conclusion is based on a review of multiple analyses investigating the relationship between tutorials and research activities. In their opinion, a negative relationship sets in the shortage model (i.e., negative correlation of time available for education and for research) or in models stressing differences between personal characteristics and skills required in teaching on one hand and in research on the other.

⁸ The study was held at Ben-Gurion University in Israel.

⁹ The exclusivity of those areas takes place if the effects from two different academic activity areas are negatively correlated to each other.

In contrast, Hattie and Marsh (1996) propose for instance that complementarity of the two discussed areas results from the fact that good research performance is a condition *sine qua non* (without which not) for good quality teaching. The reverse relationship (the influence of education on research) is analyzed as well. Hattie and Marsh (2002) see a positive effect of the teaching process on the quality of scientific research in that it makes it possible to verify research assumptions, results, and conclusions. If those aspects are discussed with a greater audience consisting of people at another (earlier) stage of scholarly development, one becomes capable of viewing research processes from a number of different perspectives.

Another argument in favor of the complementarity of both areas is the similarity of personality features required, such as involvement, creativity, inquisitiveness, and analytical thinking. Referring back to performance, the authors claim that in such cases it is possible to assert a positive relationship and complementarity between educational performance and research efficiency.

Hattie and Marsh (1996; 2002) conclude their analysis by declaring neutrality of the two areas. In their opinion, the relationship of those areas is most probably neutral, which why the prevailing belief in the inseparable bond connecting education and research is a myth.

However, the prevailing view in the literature is that the two main areas of academic activity are interrelated. The relationship between research results on one hand and teaching workload and available funds on the other was confirmed by a survey of Australian economists carried out by Fox and Milbourne (1999). Its results showed that a 10% increase in teaching workload may reduce research results by up to 20%, while a 10% increase in the number of awarded research grants can improve annual research results by as much as 15%. Another survey, carried out by a team led by Fender, Taylor, and Burke (2005) among United States (US) economists, confirmed that a researcher's teaching workload has a significant bearing on the number of his/her publications. Apart from the relationship between research and teaching the survey also analyzed the relations taking place at the interface with the university's administration. The results showed a negative correlation of scientific output and time devoted to teaching and administrative duties. Departments with fewer teaching hours and less involvement in organizational aspects on the part of academics were characterized by better research output.

Similar conclusions were presented in the report on scientific productivity of public universities in Poland by EY (2010). The research conducted by its authors show that negative relationship between teaching load and research output exists. Specifically, *ceteris paribus* (all other things being equal or held constant), a decrease in teaching load by 10% could be associated with as much as 8%-16% improvement in research efficiency. The report also shows that although such a negative relationship can be observed not only in Polish universities, researchers employed in Polish universities have much bigger teaching load than their counterparts in other countries, and moreover they quite often work at more than one university¹⁰.

In the opinion of Katz and Coleman (2001), education and research are complementary to each other. Positive effect of scientific research on education is also reported by Feldman (1987) and Korhonen, Tainio, and Wallenius (2001) who point out research achievements make curriculum updates possible, thus contributing to continuous improvement in teaching quality. Armstrong (1995) stresses the role of the teaching process as a carrier of knowledge derived from research. Several authors (Armstrong, 1983; Franke, Edlung, & Oster, 1990; Reich, 1991; Franke & Edlung, 1992) agree with the view that sharing that knowledge with

¹⁰ Strangely enough, this sentence was not published in English version of the report.

students contributes to developing more involved and inquisitive forms of learning among students. In his turn, Collopy (1992), having assumed that research success depends not only on time devoted to research but also more on better time management, concluded that involvement in research projects stimulates improved management of available time. Efficient time management is subsequently extrapolated to the realm of teaching.

Further analyses of the relationships between the three aforementioned main areas of university activity can be found in the works of Sellers-Rubio, Mas-Ruiz, and Casado-Díaz (2010) and Napiecek (2013). Seller-Rubio et al. (2010) formulated a total of eight hypotheses verified on the basis of measuring technical efficiency of various departments at a Spanish university. Empirical data came from 48 such departments, and the measurement of technical efficiency was based on the Data Envelopment Analysis (DEA) model. Napiecek (2013) used the DEA model to analyze the interrelationship of the three academic activity areas with performance calculated using the sustainable performance appraisal model for 53 departments at the PUE (Napiecek, 2013).

Analysis of Interrelation Between Revenues From Educational and Research Activities of PUE's Faculties

The PUE was established in 1926. It is one of the best, oldest, and most prestigious economic universities¹¹ in Poland, widely known for its academic excellence. It occupies top positions in the rankings published by respected magazines. With its reputation for quality it specializes in the education of highly-qualified managers, economic experts, as well as national and international administration personnel capable of operating successfully in the globalized business. It also has an undisputed position as a leader in economic research as well as a major center for applied studies, expert evaluation, analysis, and consultancy.

To a significant extent, the credit for the university's high position in academic rankings goes to its qualified teaching staff. The school employs over six hundred academics, including approximately a hundred and thirty professors.

The PUE is the only university in Poland to enjoy full academic rights in finance, economic, management, and commodity sciences. Education is provided in the form of first, second, and third (doctoral) cycle studies, MBA programs as well as post-master's degree studies (UEP, 2013).

The structure of the PUE consists of the following five faculties (further subdivided into departments):

- Faculty of Economics—WE;
- Faculty of International Business and Economics—WGM;
- Faculty of Informatics and Electronic Economy—WIGE;
- Faculty of Commodity Science—WT;
- Faculty of Management—WZ.

Apart from the faculties, the PUE also operates three research centers (Centre for European Documentation and Research, Centre for Research and Expert Assessment in Commodity Science, and Regional Statistics Centre) as well as other units (i.e., Main Library, Publishing House, Franco-Polish Centre for Management Studies, Department of Foreign Languages, etc.).

On January 1, 2014, the university will launch its Executive Centre, whose brand name will be Wielkopolska Szkoła Biznesu (Wielkopolska Business School).

¹¹ In Poland, a university of economics is simultaneously a business school.

The following part of the paper analyzes education and research revenues of the PUE. As already mentioned, the level of funding obtained by universities depends *inter alia* (among other things) on the so-called students' component and staff component.

Numerical data showing the value of the students' component used to calculate the educational subsidy are presented in Table 4.

Table 4

Number of Students, Full-Time Doctoral Students, Foreigners

	2009			2010			2011		
	Number of students	Students' number equivalent	Ratio	Number of students	Students' number equivalent	Ratio	Number of students	Students' number equivalent	Ratio
WE	2,027	2,191	1.08	2,008	2,212	1.10	2,139	2,951	1.38
WGM	964	1,193	1.24	1,175	1,269	1.08	1,295	1,339	1.03
WIGE	543	815	1.50	595	919	1.54	635	981	1.54
WT	933	2,340	2.51	937	2,322	2.48	892	2,151	2.41
WZ	2,176	3,299	1.52	2,425	3,846	1.59	2,481	3,971	1.60
	6,643	9,837		7,140	10,567		7,442	11,392	

Note. Source: by the authors based on the data from PUE.

The figures in the "students' number equivalent" columns correspond to aggregated student numbers multiplied by education cost intensity coefficients¹² at every PUE faculty. The students' number equivalent is one of the elements of the formula used to calculate the educational subsidy.

Another important component of the educational subsidy calculation algorithm is the staff component. The figures for each of the PUE's faculties for the years 2009 to 2011 are presented in Table 5.

Table 5

Number of Academic Staff

	2009			2010			2011		
	Number of staff	Staff number equivalent	Ratio	Number of staff	Staff number equivalent	Ratio	Number of staff	Staff number equivalent	Ratio
WE	114	180	1.57	109	175	1.60	108	172	1.60
WGM	47	74	1.58	49	78	1.58	52	85	1.63
WiGE	59	88	1.50	66	99	1.48	73	110	1.51
WT	60	96	1.61	62	101	1.62	70	116	1.65
WZ	153	238	1.56	152	241	1.58	157	252	1.61
	432	676		439	692		459	735	

Note. Source: by the authors based on the data from PUE.

Not like in the case of students, the number of academic staff is converted to the academic staff number equivalent. Table 5 shows the mean values of equivalent ratios. The said ratios are determined by the MNiSW and depend on the academic degrees of the staff.

Analysis of Research Subsidy Collection Efficiency

The analysis of research subsidy collection efficiency covers only the subsidies paid by the MNiSW. The

¹² Education cost intensity coefficients are determined by the Ministry of Science and Higher Education and depend on majors taught and degrees offered; higher coefficients are also given for foreign students. The table shows the weighted average of coefficients for PUE faculties.

figures presented below do not take into account other sources of research financing in each of the faculties. The values of statutory activity subsidies paid in the years 2009 to 2011 are presented in Table 6

Table 6

Research Activity Revenues

	2009	2010	2011
WE	808,293	824,002	641,439
WGM	123,899	110,616	82,192
WIGE	350,162	258,596	226,310
WT	416,058	350,690	333,703
WZ	361,046	320,173	293,445

Note. Source: by the authors.

2010 and 2011 saw a decline in research subsidies measured year-on-year. Particularly interesting is the continued decline suffered by the WGM (see Table 7).

Table 7

Changes in Research Revenues (YoY)

	2009	2010	2011
WE	100%	102%	78%
WGM	100%	89%	74%
WIGE	100%	74%	88%
WT	100%	84%	95%
WZ	100%	89%	92%

Note. Source: by the authors.

It should be remarked however that shrinking research subsidies are in keeping with general trends observed in Poland, as subsidy-based financing of university research is partially phased out and replaced with earmarked financing, grants, etc., which serves the purpose of aligning universities' operations with the current needs of their environment¹³.

The efficiency analysis was made by reference to the headcount value (number of academic staff) used in the analyzed period to calculate the research performance ratio applied by the MNiSW.

In the analyzed period, the highest research subsidy collection efficiency was observed at the WE and the WT (see Table 8).

Table 8

Research Revenues Per Employee

	2009	2010	2011
WE	7,081	7,554	5,962
WGM	2,650	2,257	1,581
WIGE	5,986	3,895	3,104
WT	6,963	5,656	4,767
WZ	2,357	2,103	1,869

Note. Source: by the authors.

¹³ On the other hand, public universities are bound by the Public Finance Act which stipulates that all their funds (including those coming from commercial sources) must be treated as public funds, subject to numerous restrictions as regards their spending. As a result, universities struggle with quick adaptation to changing environments and with responding to the needs of external stakeholders.

Table 9 shows research performance ratios of individual faculties of the PUE, calculated and used by the MNiSW to compute research subsidies paid to individual faculties.

Table 9

Research Performance Ratios of the Faculties of the PUE

Basic organizational units of the PUE—faculties	Final research performance ratio		Category of institution
	<i>E</i>		
Faculty of Informatics and Electronic Economy—WIGE	56.97		1
Faculty of Commodity Science—WT	55.83		1
Faculty of Economics—WE	46.28		1
Faculty of Management—WZ	37.87		2
Faculty of International Business and Economics—WGM	36.25		2

Note. Source: by the authors.

High research performance was confirmed in the case of the WT. However, measured with the methodology applied by the Ministry, the highest performance was observed at the WIGE. The said faculty shows the lowest ratio of students per academic staff member (see Table 10). In its turn, the WGM has the lowest research performance and the highest number of students per academic.

Table 10

Number of Full Time Students Per Academic Staff Member

	2009	2010	2011
WE	18	18	20
WGM	21	24	25
WIGE	9	9	9
WT	16	15	13
WZ	14	16	16

Note. Source: by the authors based on the data from PUE.

The above deliberations and calculations thus show that the level of faculties' research performance measured with the research subsidies allocation algorithm is negatively correlated to the values corresponding to the analyzed components in the formula used to calculate the amount of educational subsidy.

Analysis of Educational Subsidy Collection Efficiency

In the case of educational activity, the subsidy collection efficiency was analyzed with regard to the two aforementioned components of the educational subsidy calculation algorithm, i.e., the number of students and the number of academic staff.

The amount of educational activity subsidies collected by each of the PUE's faculties and an overview of their changes from 2009 and 2011 are presented in Tables 11 and 12.

Table 11

Educational Activity Revenues (Poland 000)

	2009	2010	2011
WE	13,395	13,354	13,390
WGM	7,208	7,482	7,458
WIGE	6,247	6,527	6,244
WT	9,361	9,411	9,337
WZ	19,512	19,308	20,047

Note. Source: by the authors.

Table 12

Changes in Educational Activity Revenues

	2009	2010	2011
WE	100%	100%	100%
WGM	100%	104%	100%
WIGE	100%	104%	96%
WT	100%	101%	99%
WZ	100%	99%	104%

Note. Source: by the authors.

The efficiency in education subsidy collection measured per student was compared to the actual number of students, as well as to the students' number equivalent, thus taking into account the effect of education cost intensity (see Table 13).

Table 13

Education Activity Revenues Per Student (Poland 000)

	2009	2009	2010	2010	2011	2011
WE	6.61	6.11	6.65	6.04	6.07	5.56
WGM	7.48	6.04	6.37	5.90	5.54	4.78
WIGE	11.50	7.67	10.97	7.11	9.52	6.25
WT	10.03	4.00	10.04	4.05	10.67	4.28
WZ	8.97	5.92	7.96	5.02	8.09	5.22

Note. Source: by the authors.

The difference is particularly striking in the case of the WT, whose education cost intensity coefficient is the highest among all PUE faculties. If calculations of the collection efficiency are made on the basis of the actual number of students, the faculty in question turns out to be one of the leaders. However, if the students' number equivalent is used instead of the actual number, the faculty's efficiency becomes the lowest. It is thus necessary to analyze financial performance of each faculty in order to verify whether the cost of education incurred at the WT is indeed higher.

Likewise, in the case of the staff component, the WT was one of the efficiency leaders. Similarly successful was the WGM (see Table 14).

Table 14

Education Activity Revenues Per Staff Member (Poland 000)

	2009	2010	2011
WE	117.34	122.42	124.46
WGM	154.19	152.70	143.43
WiGE	106.79	98.30	85.65
WT	156.66	151.79	133.38
WZ	127.36	126.82	127.69

Note. Source: by the authors.

Another area in analyzing the interrelation between education and research is the financial results of each faculty. Table 15 shows the results from educational activity.

Table 15

Results From Educational Activity

Basic organizational units of the PUE—faculties	Financial results from educational activity (PLN 000)		
	2009	2010	2011
Faculty of Economics—WE	5,325.53	7,319.99	6,197.58
Faculty of International Business and Economics—WGM	2,202.81	2,288.85	1,507.02
Faculty of Informatics and Electronic Economy—WIGE	-89.43	-220.70	-862.13
Faculty of Commodity Science—WT	833.75	669.75	-147.33
Faculty of Management—WZ	12,743.26	12,640.38	11,311.91

Note. Source: by the authors.

Financial results from educational activity of each faculty were compared to the performance level calculated and used by the MNiSW to compute the research subsidy for those faculties.

Table 16

Research Performance Ratio vs. Results From Educational Activity

Basic organizational units of the PUE—faculties	Ranking of	
	Research performance ratio	Financial results from educational activity
Faculty of Informatics and Electronic Economy—WIGE	100%	-3%
Faculty of Commodity Science—WT	98%	4%
Faculty of Economics—WE	81%	51%
Faculty of Management—WZ	66%	100%
Faculty of International Business and Economics—WGM	64%	16%

Note. Source: by the authors.

The ranking of faculties presented in Table 16, with the faculties ranked by their research performance and financial results from educational activity, clearly shows that the two areas are negatively correlated.

The negative correlation of education and research is further confirmed by the results from research activity (see Table 17).

By analogy to the analysis of the interrelation between research performance and financial results from educational activity of each faculty, also in this case the faculties were ranked by their financial results from the investigated area (see Table 18).

Table 17

Results From Research Activity

Basic organizational units of the PUE—faculties	Financial results from research activity (PLN)		
	2009	2010	2011
Faculty of Economics—WE	259,820	271,356	197,693
Faculty of International Business and Economics—WGM	129,017	121,641	116,265
Faculty of Informatics and Electronic Economy—WIGE	414,752	786,114	877,001
Faculty of Commodity Science—WT	264,303	468,210	700,252
Faculty of Management—WZ	226,584	237,928	295,814

Note. Source: by the authors.

Table 18

Research Performance Ratio vs. Results From Research Activity

Basic organizational units of the PUE—faculties	Ranking of	
	Financial results from educational activity	Financial results from research activity
Faculty of Informatics and Electronic Economy—WIGE	-3%	100%
Faculty of Commodity Science—WT	4%	69%
Faculty of Economics—WE	51%	35%
Faculty of Management—WZ	100%	53%
Faculty of International Business and Economics—WGM	16%	18%

Note. Source: by the authors.

On the basis of data presented in Table 18, one may conclude that each faculty's financial results from research activity are negatively correlated to their respective results from educational activity.

Conclusions

The above analysis of the interrelation between the two main areas of academic staff activity may be a valuable feedback for university managers. The said interrelation was analyzed both from the perspective of the university's main sources of revenues (i.e., subsidies), as well as from the perspective of financial results generated by the university's internal units.

The structure of algorithms used to calculate the subsidy paid to a given university may suggest a negative correlation between its revenues from educational activity and those from research. An increase in the key components of the algorithm used to calculate the educational subsidy (e.g., taking on additional academic staff and enrolling more students) may lead to a reduction in the research subsidy (for exactly the same reason).

However, by analyzing the variability of revenues, vis-a-vis the main components of algorithms are used to calculate the subsidy; one can conclude that revenues from research and from education are not interrelated. This lack of any relationship could be explained by considerable inertia of the subsidies. Changes in key algorithm components denoting the university's potential (staff number and teaching workload; number of students) do not have a proportional effect on the amount of available subsidy.

The illusionary effect on the level of subsidies paid annually to Polish universities is a clear signal to university managers that the potential for additional revenues should be searched for in areas where adequate managerial decisions can result in greater subsidies. Such areas include paid postgraduate courses or part-time studies, as well as the so-called procured research projects individually financed by the state budget or by businesses.

As regards the interrelation between the key areas of university operation, an alternative view is suggested by the analysis of the faculties' educational and research performance. The authors' analysis showed a strongly negative correlation of research performance to educational performance.

The above assertion was also confirmed by analyzing the faculties' financial results. Results from both educational and research activity in the analyzed period were investigated. A comparison of results from those two areas shows a negative correlation between research and educational activity. The faculties with the worst financial results from educational activity (WIGE and WT) are simultaneously the leaders in financial performance when it comes to research activity. A reverse situation is observed in the case of WZ.

It is equally necessary to emphasize a number of other important issues:

- Abandoning teaching activity would cause an immediate decrease of revenues related to it (particularly in terms of paid courses and to a lesser degree from subsidies, due to their inert nature) while starting research activity could yield profits no sooner than after a certain period of time. Moreover, as a rule and with few exceptions, the Polish law disallows decreasing the number of teaching hours of academic staff below a minimum set by the legislation. All that means that shifting the workload from teaching to research activities is most probably neither possible, nor would it increase profitability (to be confirmed by ongoing research);

- All Polish universities obtain revenues mostly from educational activity; it is hard to assume that they act irrationally by sacrificing science for the benefit of teaching. The PUE, as a public university, cannot make profit on extramural (weekend) studies—although they help finance other activities by facilitating adequate cost allocation. The university is only allowed to make profit on postgraduate studies—these profits then help finance other activities;

- Subsidies for teaching activity are predictable, repetitive, and dependent on objective factors. Amounts granted for scientific activity are established in a more arbitrary manner (the total amount allocated for universities in Poland are decreasing each year). Revenues from research, as prestigious as they may be, are lower, harder to get and less predictable than those from teaching;

- Although the PUE needs to maintain a certain level of scientific quality to preserve its university status, from purely business perspective it would be more rational to focus on educational activity alone.

For all institutions in the higher education sector—considering the nature of their operation and their evaluation criteria—a strategy aiming at maximized efficiency is becoming increasingly important. The amount of available subsidies is not subject to considerable fluctuations, which ensures a relatively constant level of revenues. In a longer perspective, however, the results achieved by a university should be translated into an improved assessment of its operations and thus to secure more funds for financing education and research.

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